SQD-2010

USA Model
UK Model
AEP Model

4 CHANNEL DECODER

SPECIFICATIONS

Frequency response: 20 Hz to 20 kHz

Input sensitivity and impedance:
FRONT PREAMP: 250 mV 100 kΩ
2CH TAPE: 750 mV 100 kΩ
4CH TAPE: 750 mV 100 kΩ
REC/PB: 750 mV 100 kΩ
(input)
DISCRETE: 250 mV 100 kΩ

Output level and impedance:
FRONT PREAMP: 500 mV 5 kΩ
OUTPUT { HIGH: 2 V 5 kΩ
LOW: 500 mV 5 kΩ
2CH REC OUT: 250 mV 5 kΩ
4CH REC OUT: 250 mV 5 kΩ
REC/PB: 30 mV 82 kΩ
(output)

Signal-to-noise ratio: greater than 80 dB
(weighting network A)

SQ separation:
(Input; 250 mV/2 kHz)
Lf-Rf 20 dB or more
Lb-Rb 14 dB or more
Lf-Lb 20 dB or more
Rf-Rb 20 dB or more
Lf-Rb 20 dB or more
Rf-Lb 20 dB or more
Cf-Cb 15 dB or more

Harmonic distortion:
(Input; 250 mV/2 kHz) less than 0.1% at each channel

Tone controls:
BASS ±10 dB at 100 Hz
TREBLE ±10 dB at 10 kHz

GENERAL

Semiconductors: 4 ICs, 4 FETs, 39 transistors, 47 diodes

Power requirements:
120 V 60 Hz, ac (USA Model)
110, 127, 220, 240 V 50/60 Hz, ac
(AEP and UK Model)

Power consumption: 15 W (USA Model), 17 W (AEP and UK Model)

Dimensions:
400(w) x 149(h) x 327(d) mm
$15\frac{3}{4}$ (w) x $5\frac{7}{8}$ (h) x $12\frac{7}{8}$ (d) inches

Net weight: 5.9 kg (13 lb)

Shipping weight: 8.8 kg (19 lb 7 oz)

SONY®
SERVICE MANUAL

TABLE OF CONTENTS

Section	Title	Page
1	**TECHNICAL DESCRIPTION**	
1-1.	Function of Controls	3
1-2.	Block Diagrams	5
2.	**DISASSEMBLY AND REPLACEMENT**	
2-1.	Front Panel Removal	7
2-2.	VU Meter Removal	7
2-3.	VU Meter Escutcheon Removal	7
2-4.	Front Panel Replacement	8
2-5.	Front Subchassis Removal	8
2-6.	Control Replacement	8
2-7.	Replacement of Components Secured to the Rear Panel by Nylon Rivets	9
2-8.	Chassis Layout	9
3.	**CHECKS AND ADJUSTMENTS**	
	Introduction	10
3-1.	Test Equipment Required	11
3-2.	Power Supply Voltage Check	11
3-3.	Test Equipment Setup and SQD-2010 Control Settings for Checks	11
3-4.	Output Level Check (1) for DISCRETE Circuit	12
3-5.	Output Level Check (2) for SQ Decoder Circuit	12
3-6.	Matrix Operation Check	12
3-7.	2→4 Operation Check	13
3-8.	SQ Separation Adjustment	13
3-9.	SQ Separation Troubleshooting Guide	15
4.	**REPACKING**	16
5.	**DIAGRAMS**	
5-1.	Wiring Diagram	17
5-2.	Mounting Diagram – C Board –	18
5-3.	Mounting Diagram – A Board –	18
5-4.	Mounting Diagram – E Board –	19
5-5.	Mounting Diagram – D Board –	19
5-6.	Mounting Diagram – F Board –	20
5-7.	Mounting Diagram – – REC/PB Connector Board –	20
5-8.	Schematic Diagram – Overall –	21
5-9.	Schematic Diagram – SQ Decoder/ Logic Section	23
5-10.	Mounting Diagram – B Board (SQ Decoder/Logic Section) –	25
6.	**EXPLODED VIEWS**	27
7.	**ELECTRICAL PARTS LIST**	29

SECTION 1
TECHNICAL DESCRIPTION

1-1. FUNCTION OF CONTROLS

Refer to Fig. 1-1 and Block Diagram.

1. MASTER VOLUME Control (RV8-1~4)

Regulates the four-output levels simultaneously. Note that the VU meter does not show each output-level but the relative output level among the four channels.

2. FRONT LEVEL and BACK LEVEL Controls and VU Meters

RV2 ~ RV5 control the individual output levels. Each output level is monitored by the corresponding VU meter and the relative output level is shown by the amount of meter deflection to the right. Note that the MASTER VOLUME control has no effect on the meter deflection.

3. BACK TONE Controls (BASS and TREBLE)

Control the prominence of BACK channel bass and treble notes.

4. MODE Selector (S3)

Determines the output signal mode of the front channel at FRONT PREAMP (TAPE IN) jack, and the back channel at OUTPUT (TO BACK AMP; HIGH, LOW) jack.

This switch is normally kept in the released position (NORMAL). In the MONO position (pushed-in), the output (to front preamp and back channel amp) jacks provide monaural signal. Use the MONO position for balancing the four-channel sound level. See Table 1-1.

5. SYSTEM Selector (S1)

Selects the five modes of operations as follows:

2CH ..... For 2-channel program source reproduction.

*2 → 4 ..... Converts conventional 2-channel programs into quasi-four-channel signals.

*SQ ..... SQ program reproduction. This also converts the conventional 2-channel program into quasi-four-channel signals.

*R-MTX ..... For matrix four-channel program of other-type matrix system.

DISCRETE.. For discrete four-channel programs connected to the DISCRETE INPUTs.

*Note: For conventional stereo program sources, use either the SQ, R-MTX, or 2 → 4 for four-channel listening, according to your preference.

6. MONITOR Selector (S2)

Selects the three modes of operations as follows:

4CH TAPE.. For discrete four-channel tape connected to the 4CH TAPE RECORDER TAPE inputs.

†SOURCE... For conventional program sources connected to the front amplifier.

2CH TAPE.. For two-channel tape connected to the 2CH TAPE RECORDER TAPE inputs. (the DISCRETE switch must be released)

†Note: LEVEL ADJ (RV1 on the rear panel) controls the input signal level to avoid possible overload.

Table 1-1.

MODE Switch Position	Input or decoded signal	Output	Remarks
NORMAL	Lf	Lf	
	Rf	Rf	
	Lb	Lb	
	Rb	Rb	
MONO	Lf, Rf, Lb, Rb	Lf, Rf, Lb, Rb	Useful for balancing the sound level of the four channels.

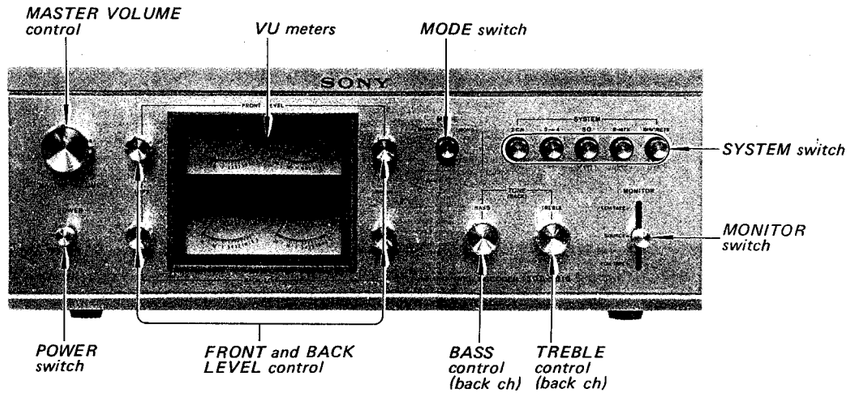


Fig. 1-1 (a). Front view

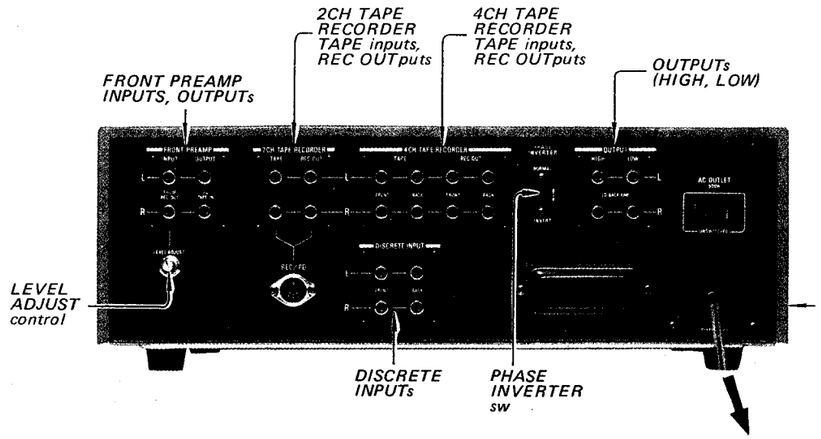


Fig. 1-1 (b). Rear view

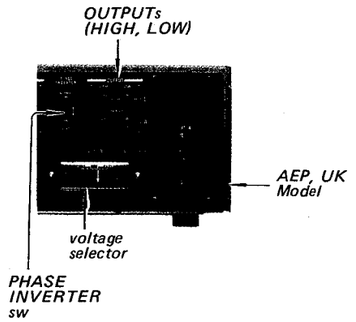
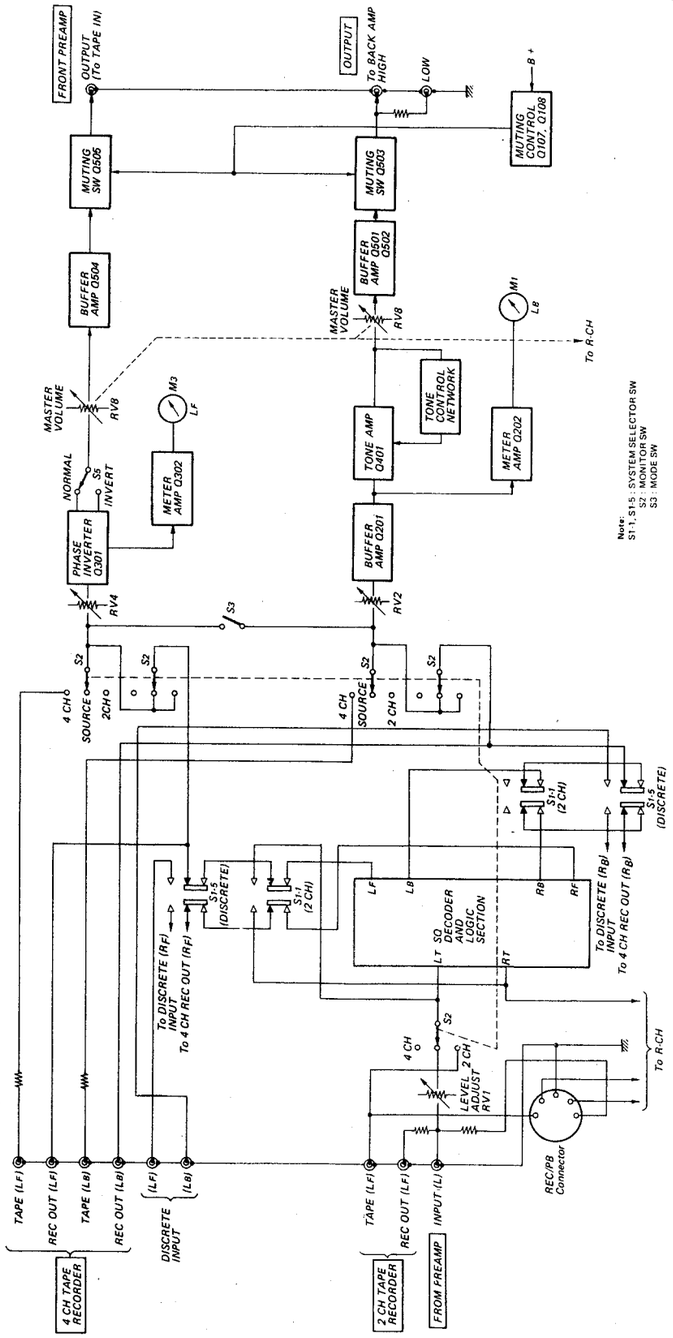


Fig. 1-1 (b). Rear view

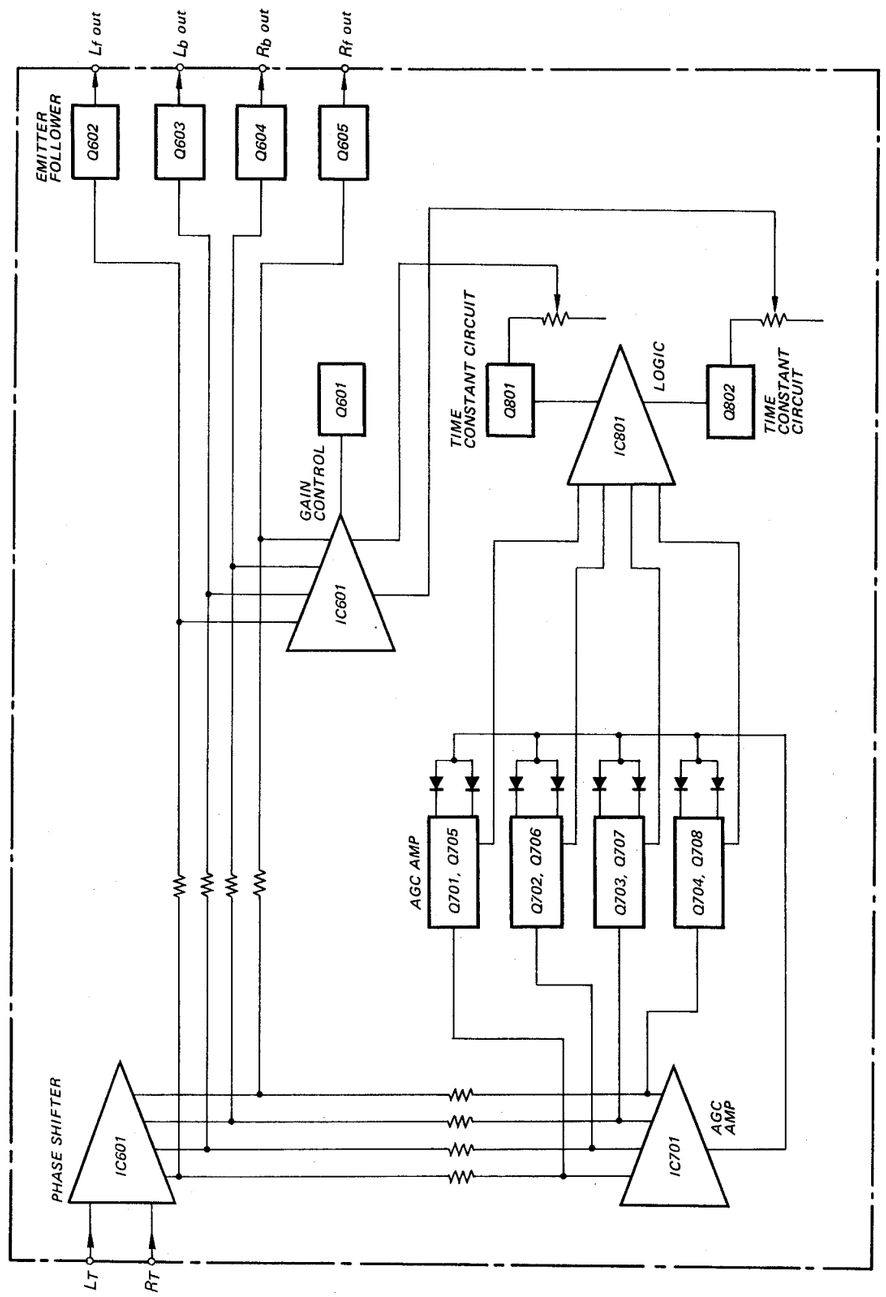
1-2. BLOCK DIAGRAMS

(1) Overall



Note:
S1-1, S1-5 : SYSTEM SELECTOR SW
S2 : MONITOR SW
S3 : MODE SW

(2) SQ Decoder and Logic Section



SECTION 2
DISASSEMBLY AND REPLACEMENT

WARNING

Unplug the ac power cord before starting any disassembly or replacement procedures.

Note: All screws in this service manuals are phillips type (cross recess type) unless otherwise indicated.

2-1. FRONT PANEL REMOVAL

1. Remove all the knobs and the top cover.
2. Remove the three screws at front top and bottom of the chassis shown in Figs. 2-1 and 2-2.
3. Separate the front panel along with the VU meters from the chassis.

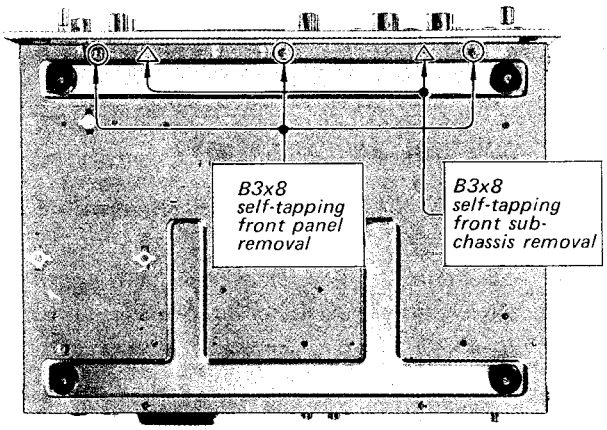


Fig. 2-1. Bottom view

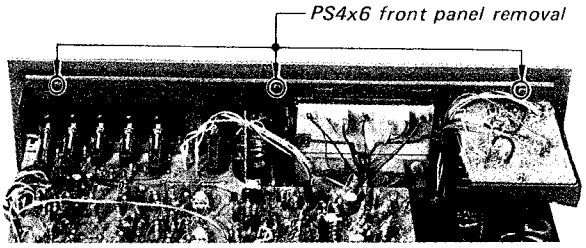


Fig. 2-2. Front panel removal

2-2. VU METER REMOVAL

1. Remove the front panel as described in Procedure 2-1, then pry out the VU meter clamp with a screwdriver as shown in Fig. 2-3.
2. Remove the clamp, as shown in Fig. 2-3, then take out the VU meter.

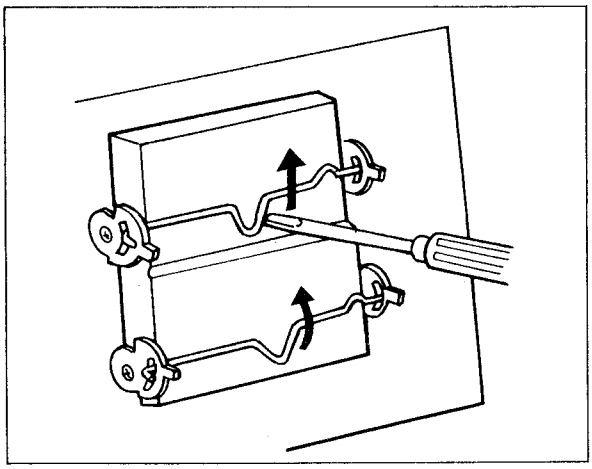


Fig. 2-3. VU meter removal

2-3. VU METER ESCUTCHEON REMOVAL

1. Remove the VU meters as described in Procedure 2-2, then loosen the four screws securing the retainer shown in Fig. 2-4.
2. Turn the tab of the retainer in the direction shown by the arrows in Fig. 2-4.
3. Remove the four retainers, then, press the escutcheon from the back.

Note: Always install the retainer correctly as shown in Fig. 2-5. Otherwise, the escutcheon does not fit properly.
Always fix the escutcheon in place by turning the retainer as shown in Fig. 2-6, when performing reinstallation.

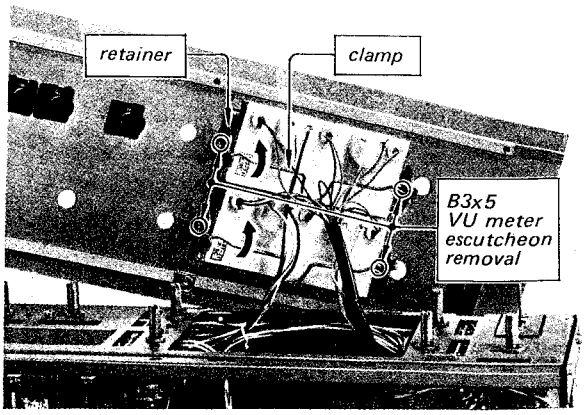


Fig. 2-4. VU meter escutcheon removal

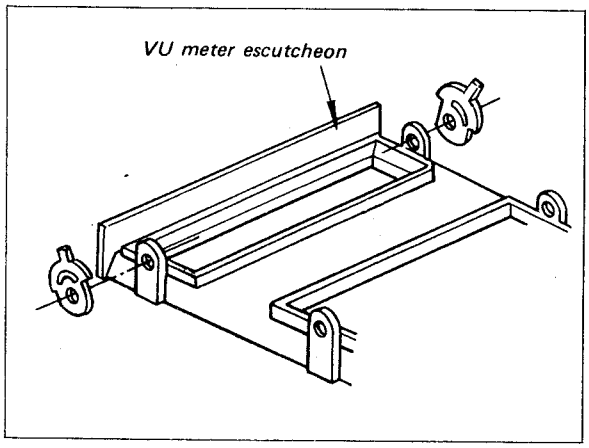


Fig. 2-5. Retainer reinstallation

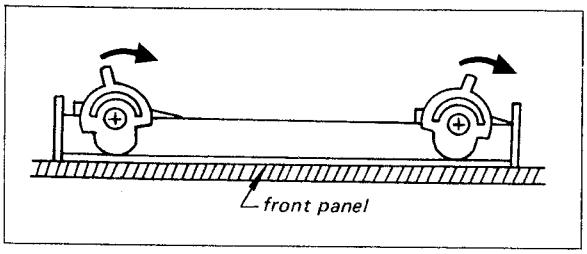


Fig. 2-6. Fixing the escutcheon

2-4. FRONT PANEL REPLACEMENT

1. Remove the VU meter escutcheon as described in Procedure 2-3, then install a new one.

2-5. FRONT SUBCHASSIS REMOVAL

Front subchassis is a vertical plate on which all controls are mounted.

1. Remove the front panel (See Procedure 2-1).
2. Remove the two screws at bottom front (See Fig. 2-1), and two screws at each side of the front subchassis shown in Fig. 2-7.

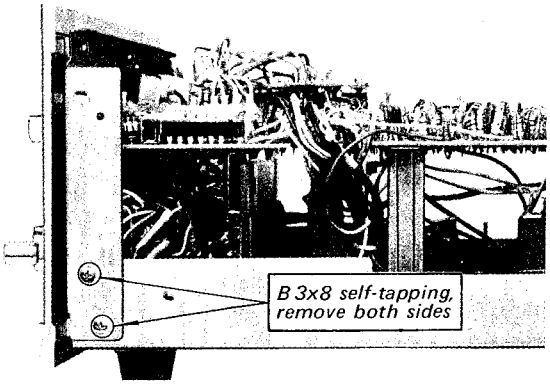


Fig. 2-7. Front subchassis removal

2-6. CONTROL REPLACEMENT

1. Remove the front subchassis as described in Procedure 2-5.
2. All controls can be removed by taking out the screws or nuts illustrated in Fig. 2-8.

   Note: Perform the replacement of MASTER VOLUME Control, FRONT and BACK Level Control, and TONE Control by using a soldering iron having a solder-sucking tip.
3. To replace System or Mode switch, remove the B board, then unsolder 6-key pushbutton switch.

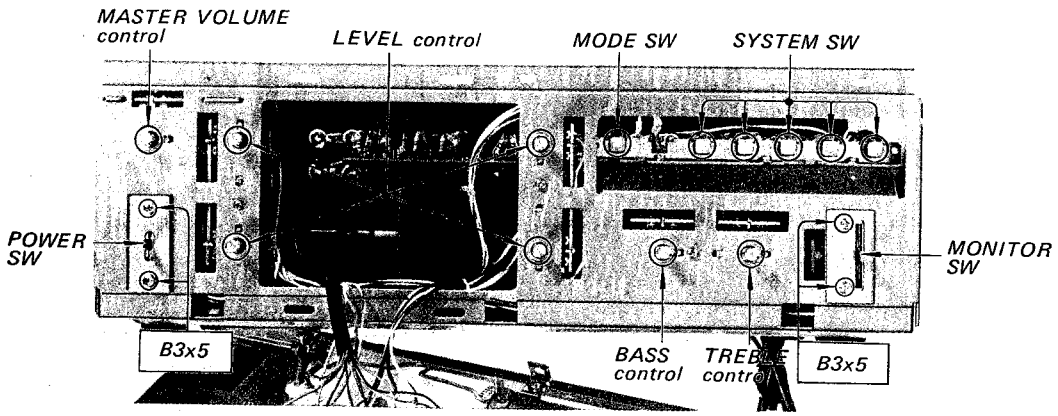


Fig. 2-8. Control replacement

2-7. REPLACEMENT OF COMPONENTS SECURED TO THE REAR PANEL BY NYLON RIVETS

1. Remove the nylon rivets securing the defective components by pushing its end with tweezers as shown in Fig. 2-9.

   Note: For installation, insert the flared portion of the rivet into the opening first, then push the head as far as it will go.

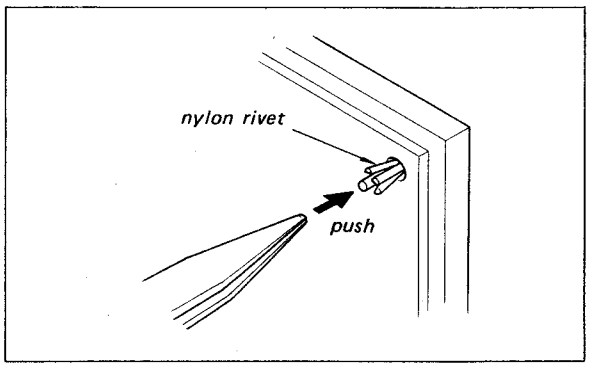
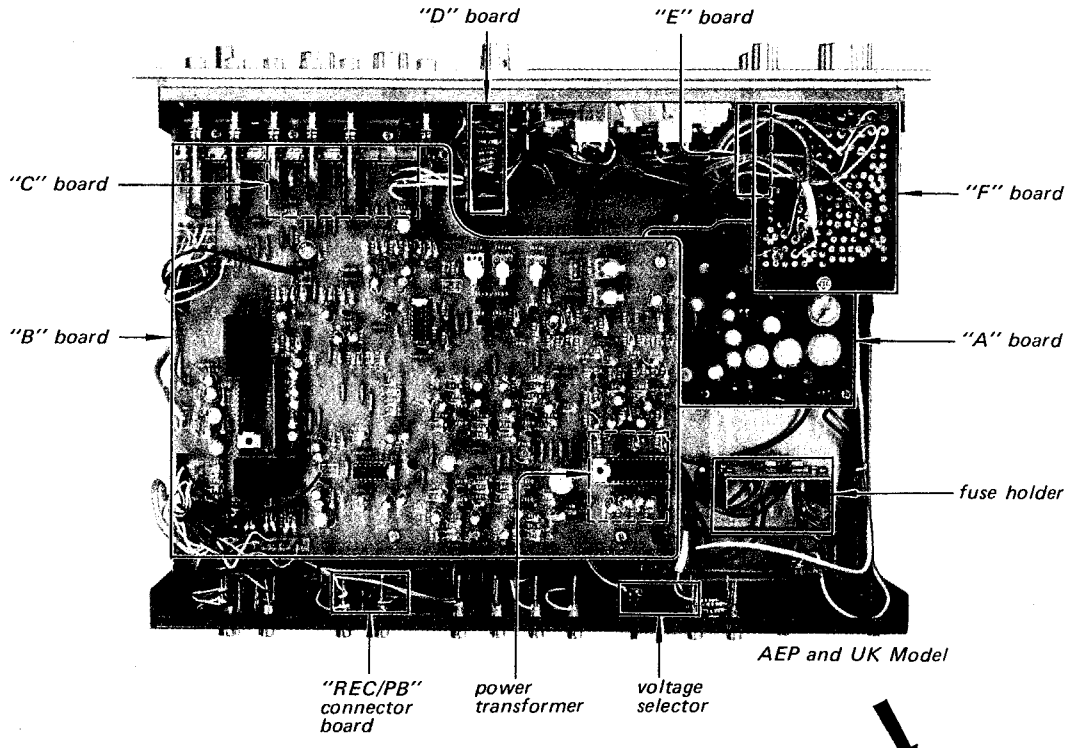
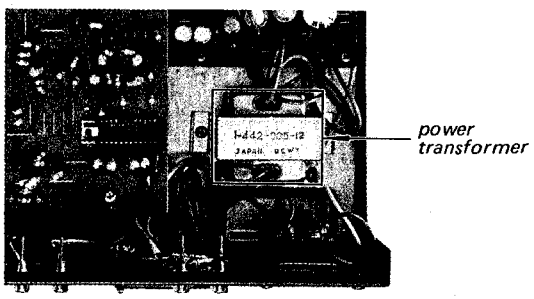


Fig. 2-9. Nylon rivet removal

2-8. CHASSIS LAYOUT





SECTION 3
CHECKS AND ADJUSTMENTS

INTRODUCTION

To perform the checks and adjustments in this section, you must have a signal source capable of simulating the various components of an SQ signal. The required signal components and their phase relationships are summarized in Table 3-1.

The required signal modes can be produced by either of two methods: the first is by the SONY SQ CHECKER Model 0005, available at each SONY Factory Service Center and the other method is by using an accurate audio oscillator and the Signal Mode Selector shown in Fig. 3-1. To obtain an accurate result with the latter method, the frequency of the oscillator must be set to 2kHz ±1%, and precision components must be used where the Signal Mode Selector schematic diagram indicates.

Table 3-1.

Output	Mode					
	L_F	R_F	C_F	C_B	L_B	R_B
L-CH OUT	1	0	1	1	1	1
R-CH OUT	0	1	1	1	1	1
Phase difference between L-CH and R-CH output	-	-	0°	180°	90°	-90°

Note: L_F ..... Left front
R_F ..... Right front
C_F ..... Center front
C_B ..... Center back
L_B ..... Left back
R_B ..... Right back

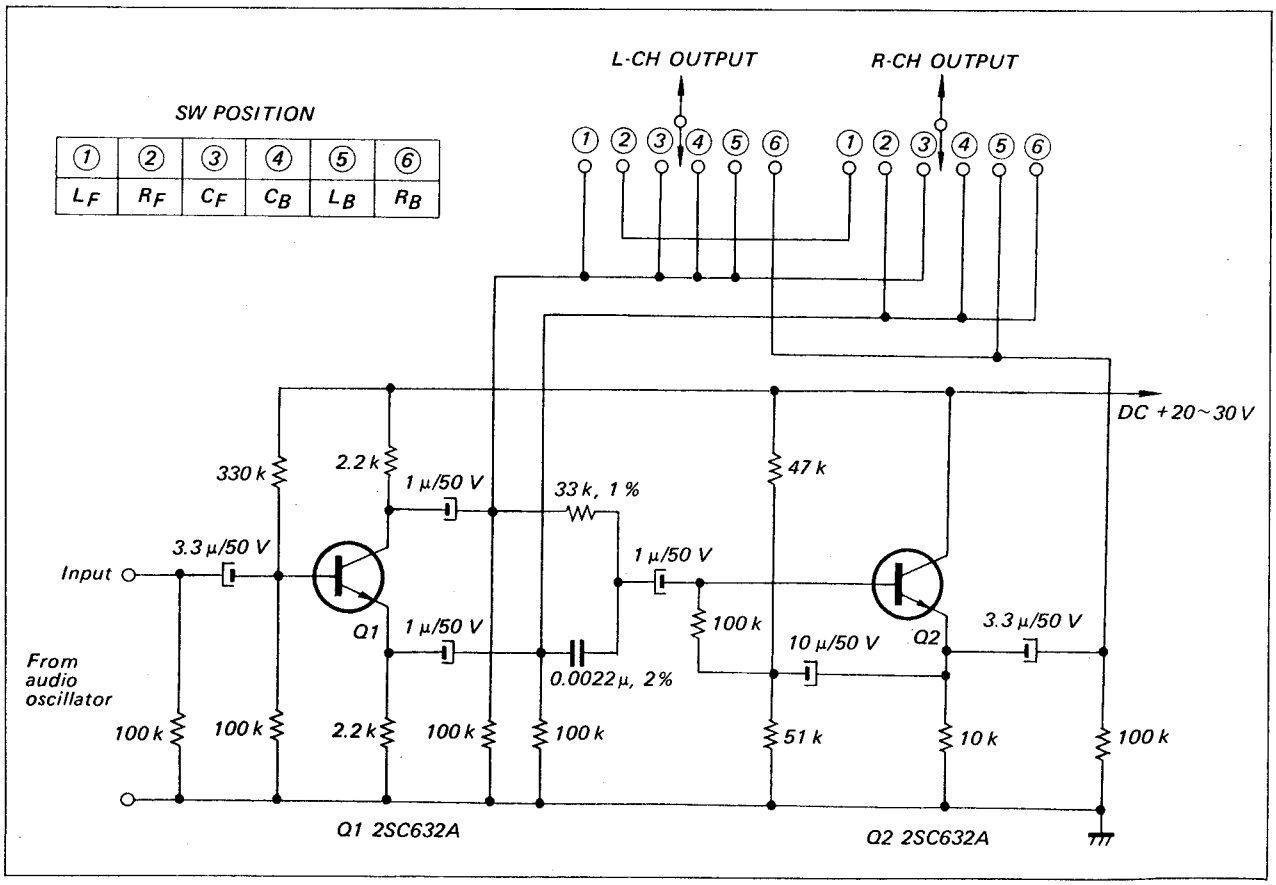


Fig. 3-1. Signal mode selector schematic diagram

Note: dB units are used in all the following procedures for the signal level.
(0 dB = 0.775 V rms)

3-1. TEST EQUIPMENT REQUIRED

1. SQ CHECKER Model 0005 (SONY) or Audio Oscillator and Signal Mode Selector. (See Fig. 3-1)
2. Ac VTVM
3. Dc voltmeter

3-2. POWER SUPPLY VOLTAGE CHECK

Turn on the power of SQD-2010. Check the voltages at the points on A board shown in Fig. 3-2.

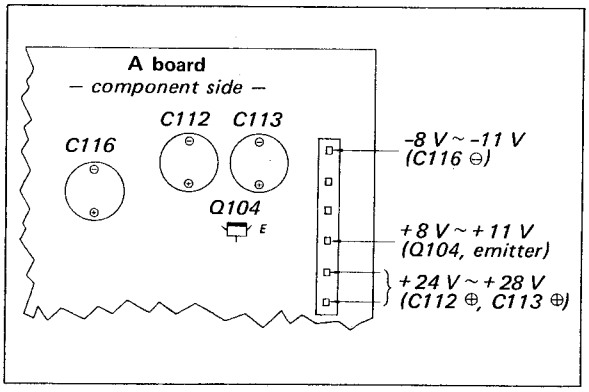


Fig. 3-2. Power supply voltage check

3-3. TEST EQUIPMENT SETUP AND SQD-2010 CONTROL SETTINGS FOR CHECKS

1. Fig. 3-3 shows the test equipment setup.
2. Set SQD-2010 controls as follows unless otherwise specified.

MASTER VOLUME ..... fully clockwise (max.)
FRONT and BACK
LEVEL control ..... fully clockwise (max.)
MODE switch ..... NORMAL
TONE control ..... mechanical mid position
SYSTEM switch ..... SQ
MONITOR switch ..... SOURCE
LEVEL Adj. (rear panel)... fully clockwise (max.)

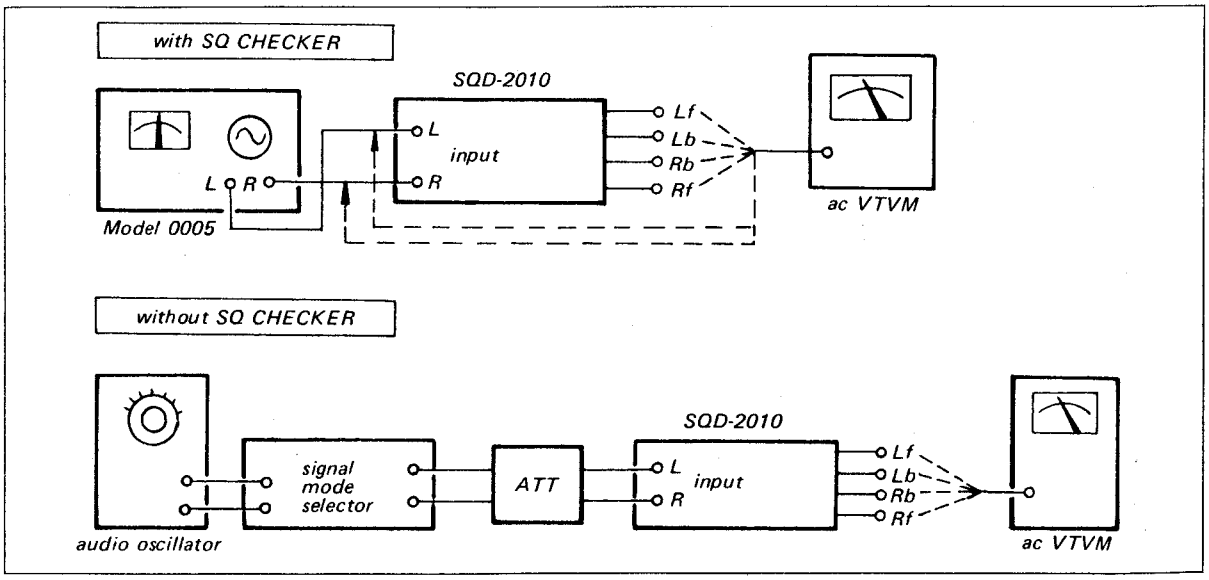


Fig. 3-3. SQD-2010 check and adjustment setup

3-4. OUTPUT LEVEL CHECK (1) FOR DISCRETE CIRCUIT

1. Set the SYSTEM switch to DISCRETE.
2. With the equipment connected as shown in Fig. 3-3, feed a 2 kHz/-10 dB signal to the each DISCRETE (L_f, L_b, R_f and R_b) input terminal.
3. In each case, measure the corresponding output signal level at output jack. The result should be as given in Table 3-2. If necessary, check the C, D, E or F board.

Table 3-2.

Input (2 kHz, -10 dB)		Output		
DIS-CRETE INPUT	Lf	"TO TAPE IN" (L-CH)		-5 ± 1 dB
	Rf	"TO TAPE IN" (R-CH)		-5 ± 1 dB
	Lb	"TO BACK AMP" (L-CH)	HIGH	+7.5 ± 1 dB
			LOW	-5 ± 1 dB
	Rb	"TO BACK AMP" (R-CH)	HIGH	+7.5 ± 1 dB
			LOW	-5 ± 1 dB

3-5 OUTPUT LEVEL CHECK (2) FOR SQ DECODER CIRCUIT

1. Set the SYSTEM switch to SQ.
2. With the equipment connected as shown in Fig. 3-3, feed a 2 kHz/-10 dB signal to the "FROM REC OUT" jacks (L and R channels).
3. Change the input signal mode and measure the signal level at the 4CH TAPE RECORDER REC OUT terminal corresponding to the input signal mode. The result should be as given in Table 3-3. If necessary, check the B board.

Table 3-3.

Input signal mode	4CH REC OUT	Output
L_F	Lf	-11 ± 1 dB
R_F	Rf	-11 ± 1 dB
L_B	Lb	-11 ± 1 dB
R_B	Rb	-11 ± 1 dB

3-6. MATRIX OPERATION CHECK

1. Set the SYSTEM switch to R-MTX.
2. With the equipment connected as shown in Fig. 3-3, feed a 2 kHz/-10 dB signal to the L-CH or R-CH of the "FROM REC OUT" jack (any mode of signal is acceptable). Measure the output level at the 4-CH TAPE RECORDER REC OUT terminals. The result should be as given in the Table 3-4.

Table 3-4.

Input signal (applied to "FROM REC OUT")	Output (at 4CH TAPE RECORDER REC OUT)			
	Lf	Rf	Lb	Rb
L_F	-10 dB	-25 ~ -27 dB	-12 ± 2 dB	-19 ~ -20 dB
R_F	-25 ~ -27 dB	-10 dB	-19 ~ -20 dB	-12 ± 2 dB

Note: Do not apply test signal to L and R channels simultaneously when performing these checks.

3-7. 2 → 4 OPERATION CHECK

1. Set the SYSTEM switch to 2 → 4.
2. With equipment connected as shown in Fig. 3-3, feed a 2 kHz/–10 dB signal to the L-CH or R-CH of the "FROM REC OUT" terminal. Measure the output level at the 4CH TAPE RECORDER REC OUT jacks. The result should be as given in the Table 3-5.

Table 3-5.

Input signal (applied to "FROM REC OUT")	Output (at 4CH TAPE RECORDER REC OUT)			
	Lf	Rf	Lb	Rb
L_F	–10 dB	–29 ± 2 dB	–13 ± 2 dB	–13 ± 2 dB
L_B	–13 ± 2 dB	–13 ± 2 dB	–10 dB	–24 ± 2 dB

Note: Do not apply test signal to L and R channels simultaneously when performing these checks.

3-8. SQ SEPARATION ADJUSTMENT

1. With the equipment connected as shown in Fig. 3-3, set the SYSTEM switch to SQ.
2. Adjust RT801 and RT802 so that the voltages at the sources of Q801 and Q802 (TP1 and TP2 in Fig. 3-4) become 0 ± 0.1 V when there is no input signal to SQD-2010.
3. Set the SQ checker (or the signal mode selector) to L_F and apply a 2 kHz/–10 dB signal to SQD-2010's FRONT PREAMP INPUT (FROM REC OUT) terminals.
4. Turn the RT601 fully clockwise and set the ac VTVM, connected to Lf output terminal (4CH TAPE RECORDER REC OUT), to 0 dB.
5. Ground the test point (TP3) shown in Fig. 3-4. Adjust RT601 so that the ac VTVM reads –3 dB.
6. Free the test point from the ground and check that the Lf output level goes back to 0 dB.
7. Change the input signal mode from L_F to L_B. Adjust RT804 so that the Lf output level becomes –20 dB.
8. Disconnect the ac VTVM from Lf output jack and connect it to Lb output jack of SQD-2010.
9. Set the SQ checker (or the signal mode selector) to L_B, and apply a 2 kHz/–10 dB signal to SQD-2010.
10. Turn the RT803 fully clockwise and set the ac VTVM connected to Lb output jack to 0 dB.
11. Change the input signal mode from L_B to L_F. Adjust RT803 so that the Lb output level becomes –20 dB.
12. After completing the adjustments to RT801, RT802, RT803, RT804, and RT601, check SQ separation at the each output jack according to Table 3-6 and 3-7.

Table 3-6.

Input signal mode	Output (at 4CH TAPE RECORDER REC OUT)			
	Lf	Rf	Lb	Rb
L_F	adjust for 0 dB	–30 dB or less	–20 ± 2.5 dB	–20 ± 2.5 dB
R_F	–30 dB or less	adjust for 0 dB	–20 ± 2.5 dB	–20 ± 2.5 dB
L_B	–20 ± 2.5 dB	–20 ± 2.5 dB	adjust for 0 dB	–25 dB or less
R_B	–20 ± 2.5 dB	–20 ± 2.5 dB	–25 dB or less	adjust for 0 dB

Table 3-7.

Input signal mode	Output (at 4CH TAPE RECORDER REC OUT)			
	Lf	Rf	Lb	Rb
C_F	adjust for 0 dB	adjust for 0 dB	-15 ~ -20 dB	-15 ~ -20 dB
C_B	-15 ~ -20 dB	-15 ~ -20 dB	adjust for 0 dB	adjust for 0 dB

Adjustment Parts Location

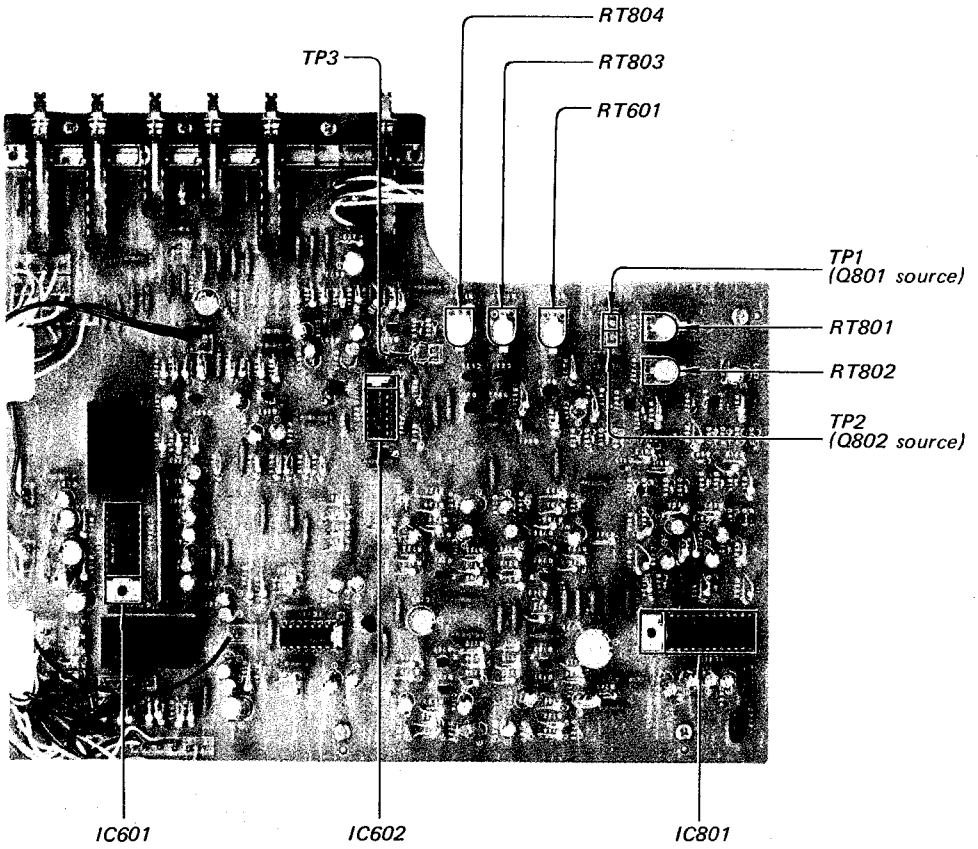


Fig. 3-4. Adjustment parts location

3-9. SQ SEPARATION TROUBLESHOOTING GUIDE

Notes: Perform the SQ separation adjustment (Sec. 3-8) first, when there is trouble with SQ separation.
Connect SQ CHECKER to SQD-2010 and feed 2 kHz/-10 dB signal, as in Sec. 3-8, during the troubleshooting procedures.
Excessive distortion and unusually low output level in SQ operation often occur when there is no control voltage from IC602.

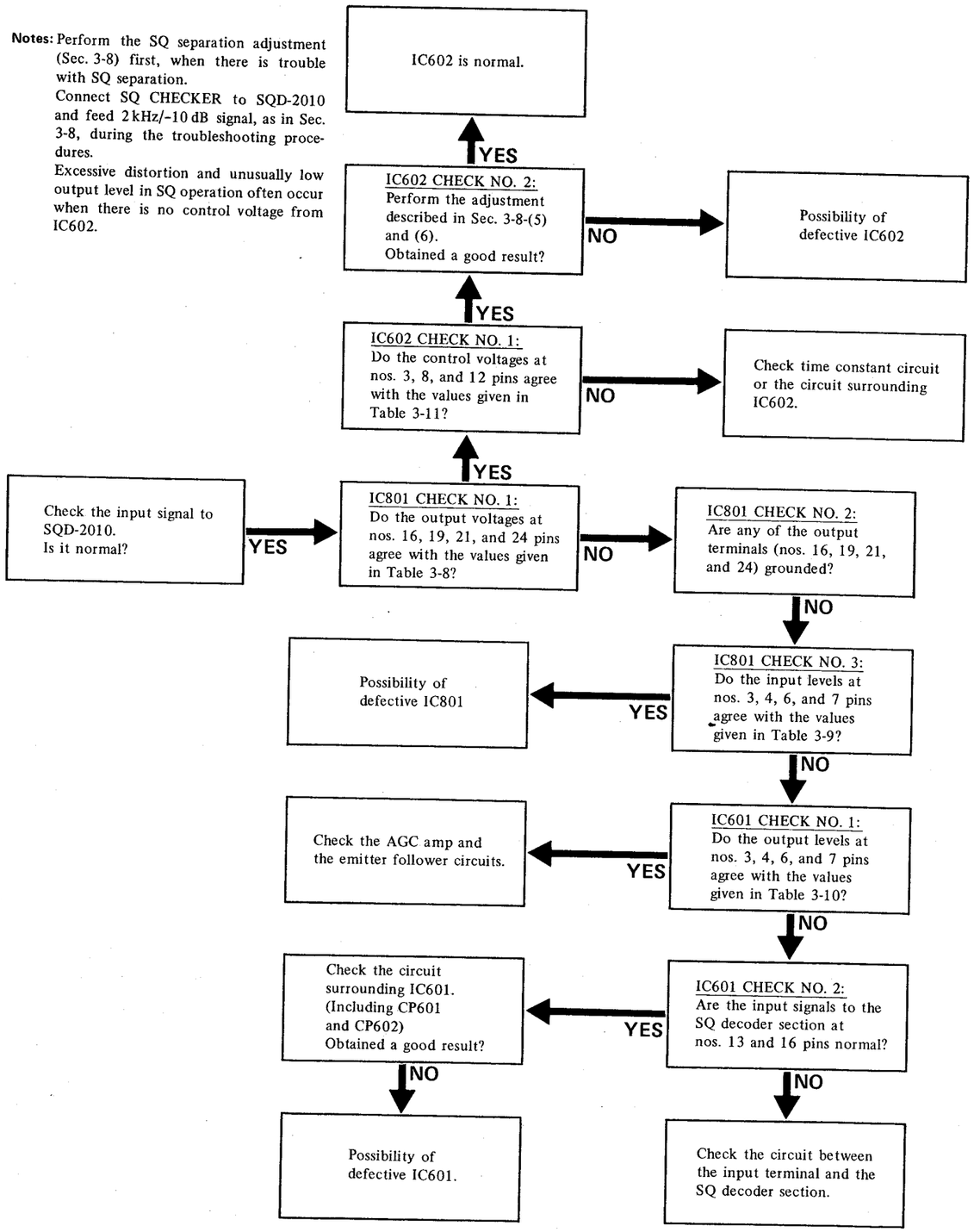

IC602 is normal.
YES
IC602 CHECK NO. 2:
Perform the adjustment described in Sec. 3-8-(5) and (6).
Obtained a good result?
NO
Possibility of defective IC602
YES
IC602 CHECK NO. 1:
Do the control voltages at nos. 3, 8, and 12 pins agree with the values given in Table 3-11?
NO
Check time constant circuit or the circuit surrounding IC602.
YES
Check the input signal to SQD-2010.
Is it normal?
YES
IC801 CHECK NO. 1:
Do the output voltages at nos. 16, 19, 21, and 24 pins agree with the values given in Table 3-8?
NO
IC801 CHECK NO. 2:
Are any of the output terminals (nos. 16, 19, 21, and 24) grounded?
NO
IC801 CHECK NO. 3:
Do the input levels at nos. 3, 4, 6, and 7 pins agree with the values given in Table 3-9?
YES
Possibility of defective IC801
NO
IC601 CHECK NO. 1:
Do the output levels at nos. 3, 4, 6, and 7 pins agree with the values given in Table 3-10?
YES
Check the AGC amp and the emitter follower circuits.
NO
IC601 CHECK NO. 2:
Are the input signals to the SQ decoder section at nos. 13 and 16 pins normal?
YES
Check the circuit surrounding IC601. (Including CP601 and CP602)
Obtained a good result?
NO
Possibility of defective IC601.
NO
Check the circuit between the input terminal and the SQ decoder section.

Table 3-8.

Input Signal Mode \ IC pin no.	Output Voltages of IC801			
	16	19	21	24
L_F	-4 V	+4 V	0 ~ +1 V	0 ~ -1 V
R_F	-4 V	+4 V	0 ~ +1 V	0 ~ -1 V
L_B	+4 V	-4 V	0 ~ -1 V	0 ~ +1 V
R_B	+4 V	-4 V	0 ~ -1 V	0 ~ +1 V
C_F	0 ~ -1 V	0 ~ +1 V	+4 V	-4 V
C_B	0 ~ +1 V	0 ~ -1 V	-4 V	+4 V

Table 3-9.

Note: A level given in this table is a difference compared to a reading obtained at (*) within the same column.

Input Signal Mode \ IC pin no.	Relative Input Levels of IC801			
	7	3	4	6
L_F	-3 dB	-30 dB or less	*	-3 dB
R_F	-3 dB	*	-30 dB or less	-3 dB
L_B	-25 dB or less	-3 dB	-3 dB	*
R_B	*	-3 dB	-3 dB	-25 dB or less
C_F	*	*	*	*
C_B	*	*	*	*

Table 3-10.

Note: A level given in this table is a difference compared to a reading obtained at (*) within the same column.

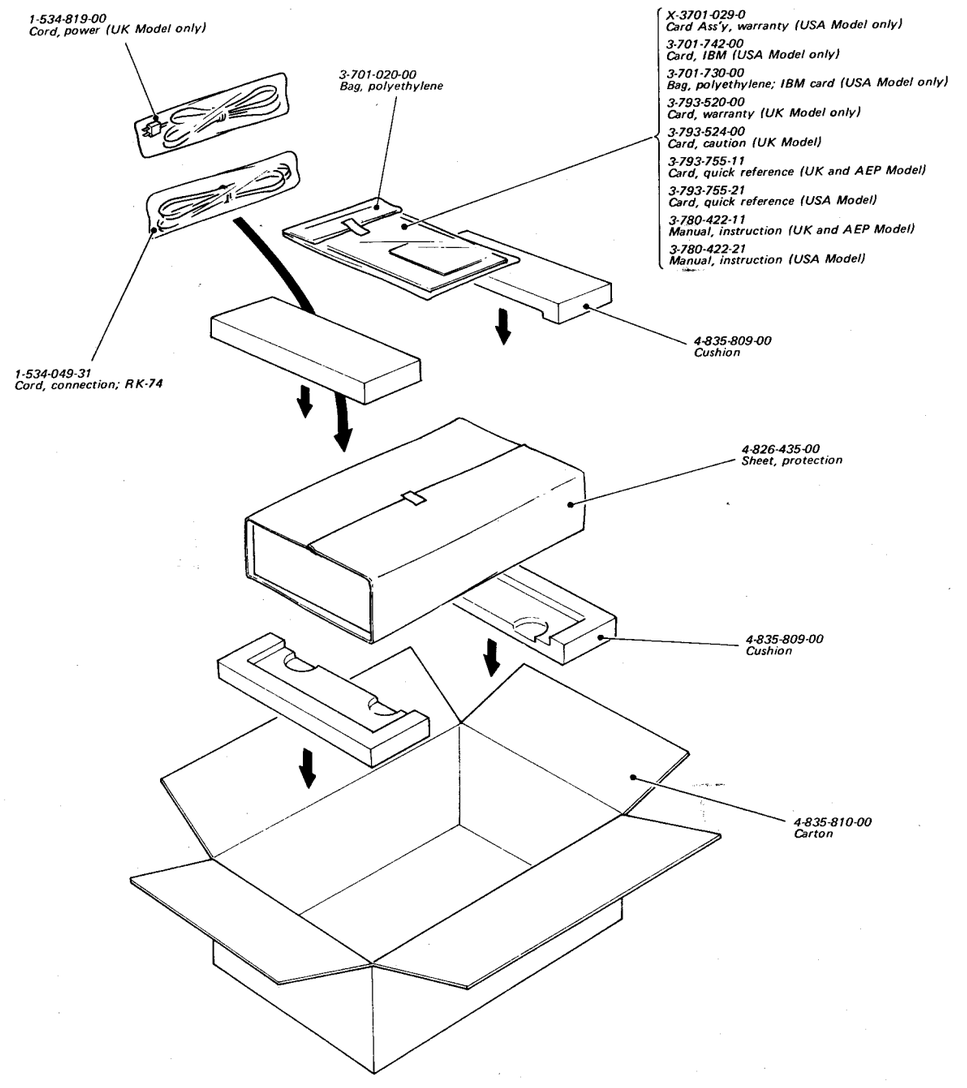
Input Signal Mode \ IC pin no.	Relative Output Levels of IC601			
	3	4	6	7
L_F	-3 dB	-30 dB or less	*	-3 dB
R_F	-3 dB	*	-30 dB or less	-3 dB
L_B	-25 dB or less	-3 dB	-3 dB	*
R_B	*	-3 dB	-3 dB	-25 dB or less
C_F	*	*	*	*
C_B	*	*	*	*

Table 3-11.

Input Signal Mode \ IC pin no.	Control Voltages of IC602		
	3	8	12
L_F	+1 ~ 2 V	-1 ~ -2 V	+1 ~ 2 V
R_F	+1 ~ 2 V	-1 ~ -2 V	+1 ~ 2 V
L_B	-1 ~ -2 V	+1 ~ 2 V	-1 ~ -2 V
R_B	-1 ~ -2 V	+1 ~ 2 V	-1 ~ -2 V
C_F	+1 ~ 2 V	-1 ~ -2 V	+1 ~ 2 V
C_B	-1 ~ -2 V	+1 ~ 2 V	-1 ~ -2 V

SECTION 4
REPACKING

The SQD-2010's original shipping carton and packing materials are the ideal container for shipping the unit. For the maximum protection, the SQD-2010 must be repacked in these materials precisely as before. The proper repacking procedures are shown in Fig. 4-1.



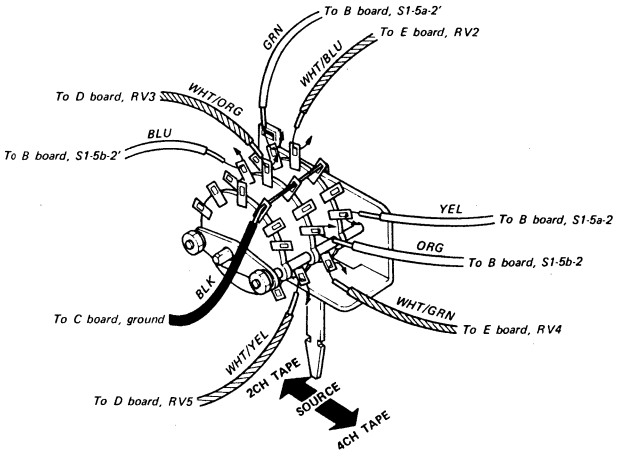
USA Model ..... Serial No. 800,001 and later
AEP Model ..... Serial No. 900,001 and later
UK Model ..... Serial No. 600,001 and later

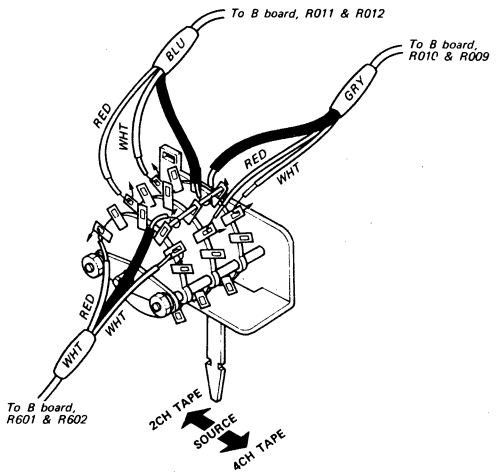
Fig. 4-1. Repacking

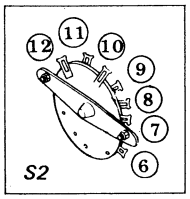
SECTION 5
DIAGRAMS

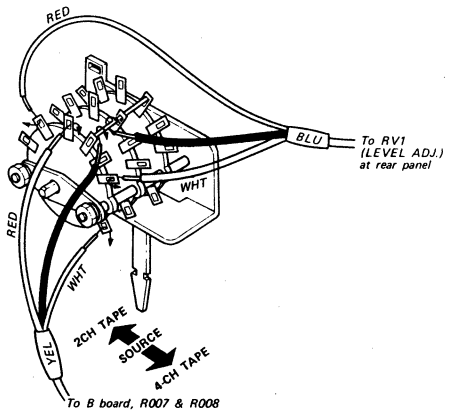
5-1. WIRING DIAGRAM

(1) MONITOR Switch (S2)

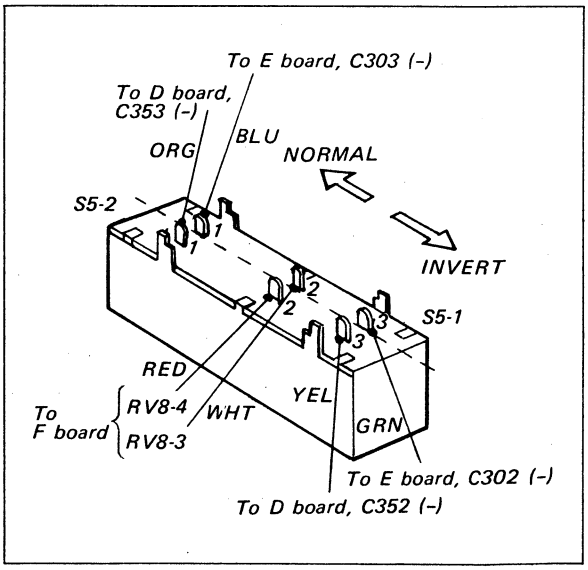






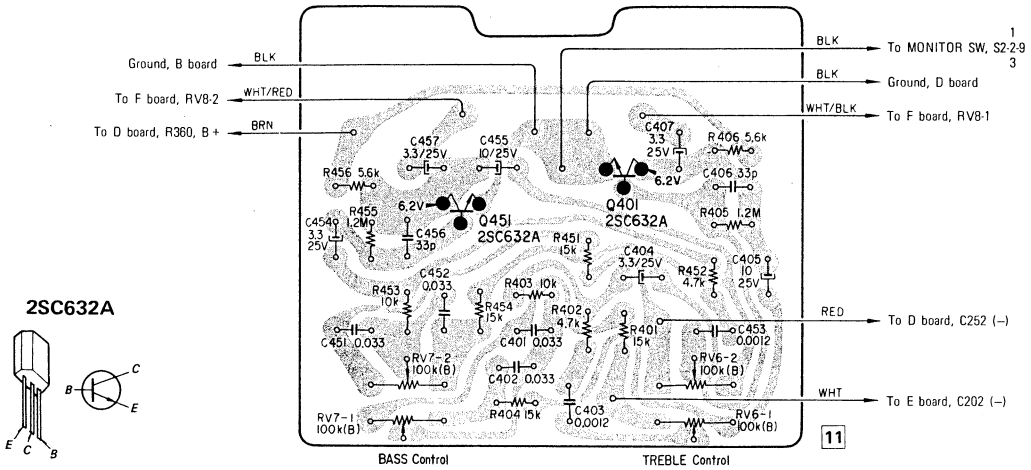


(2) PHASE INVERTER Switch (S5)



5-2. MOUNTING DIAGRAM – C Board –

– Conductor Side –



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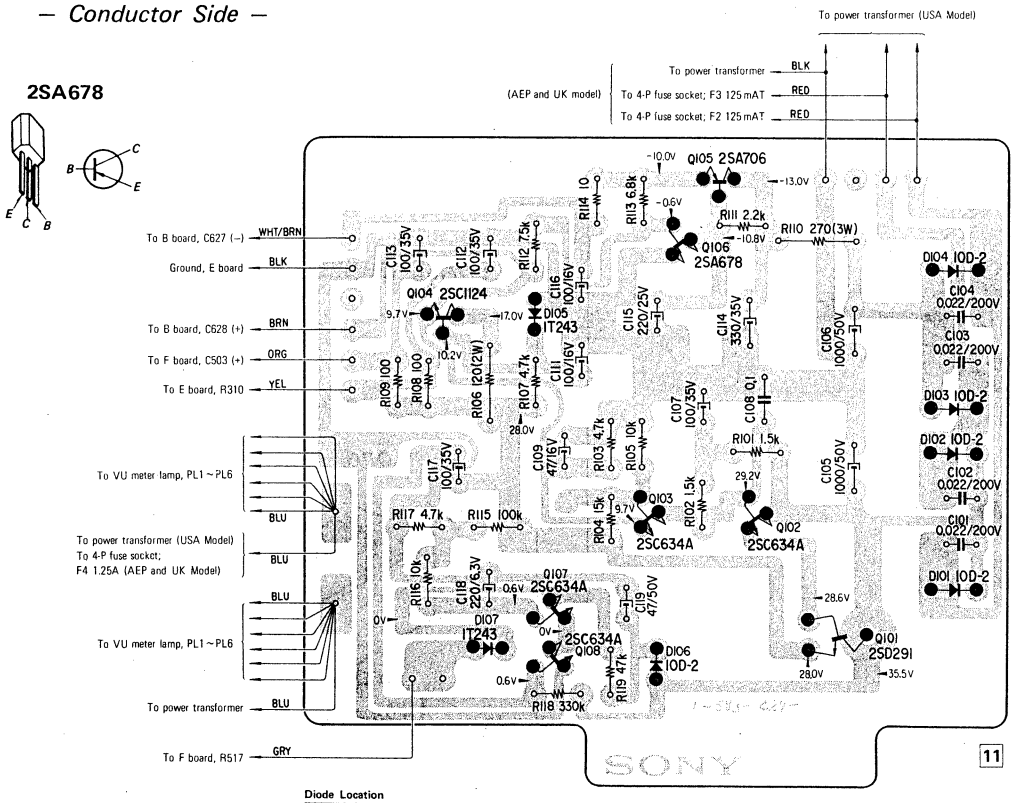
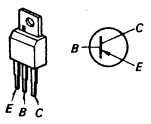
5-3. MOUNTING DIAGRAM – A Board –

– Conductor Side –

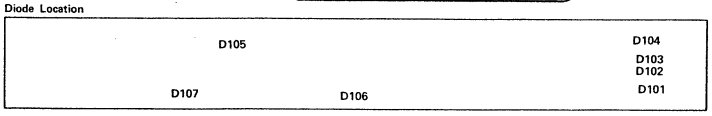


2SA678

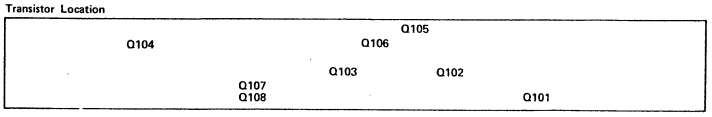
2SA706



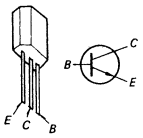
Diode Location



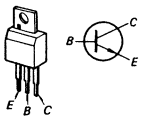
Transistor Location



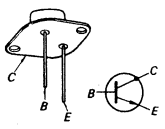
2SC634A



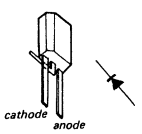
2SC1124



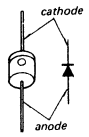
2SD291



1T243

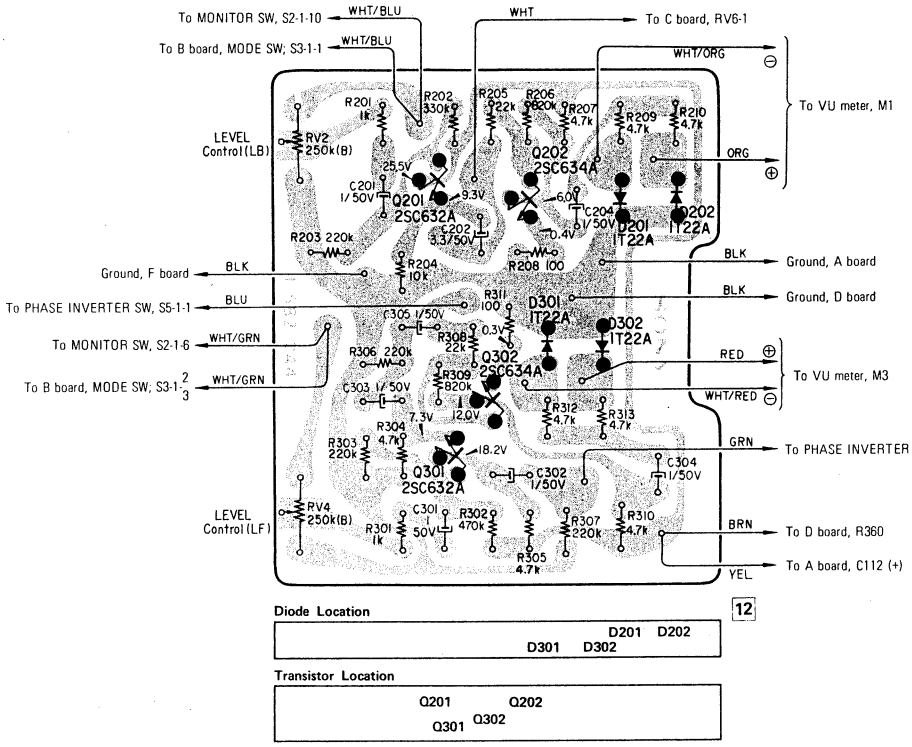


10D-2



5-4. MOUNTING DIAGRAM – E Board –

– Conductor Side –

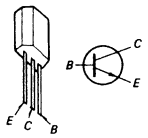


Diode Location

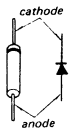
12

Transistor Location

2SC632A
2SC634A

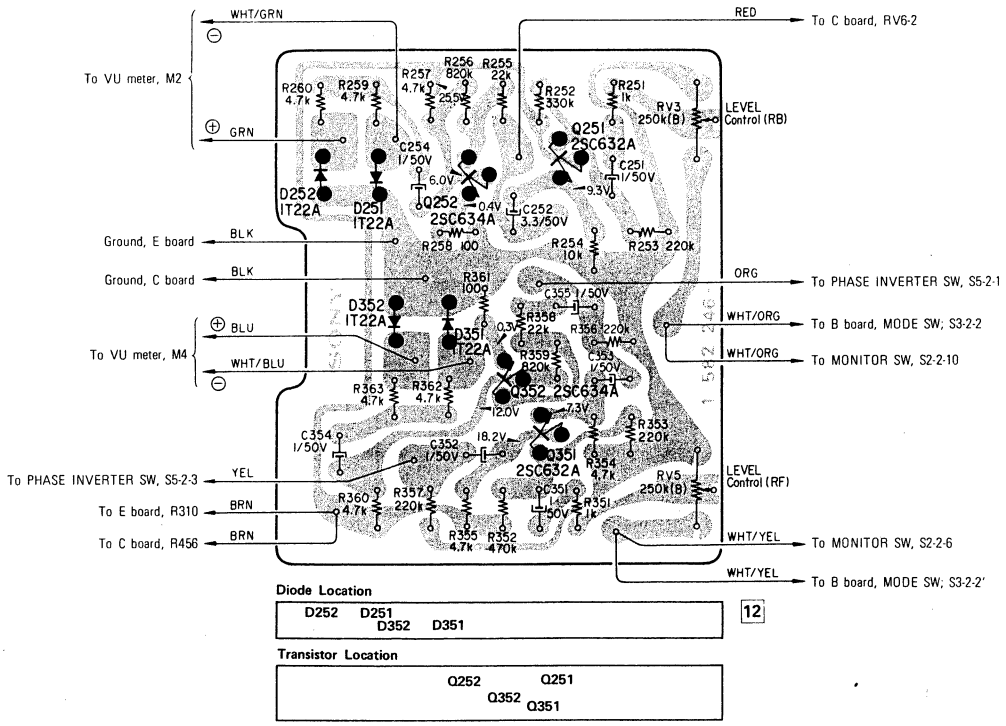


1T22A



5-5. MOUNTING DIAGRAM – D Board –

– Conductor Side –

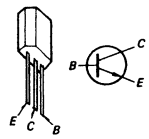


Diode Location

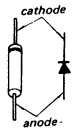
12

Transistor Location

2SC632A
2SC634A

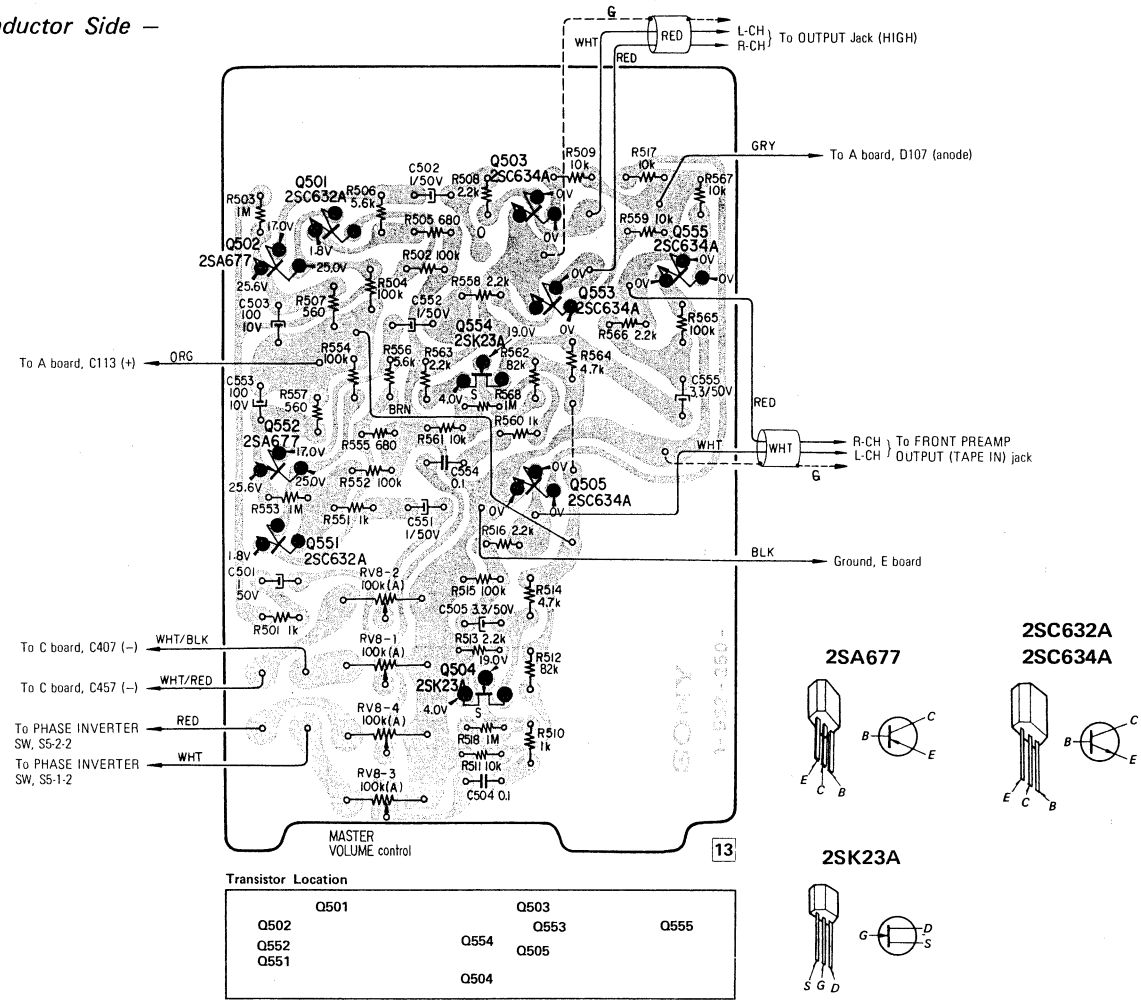


1T22A



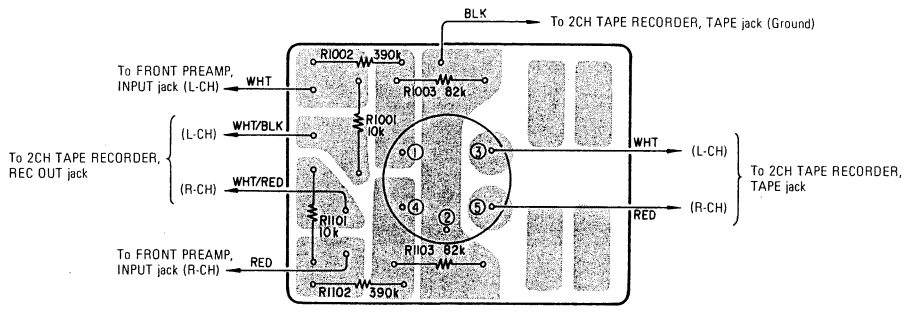
5-6. MOUNTING DIAGRAM – F Board –

– Conductor Side –

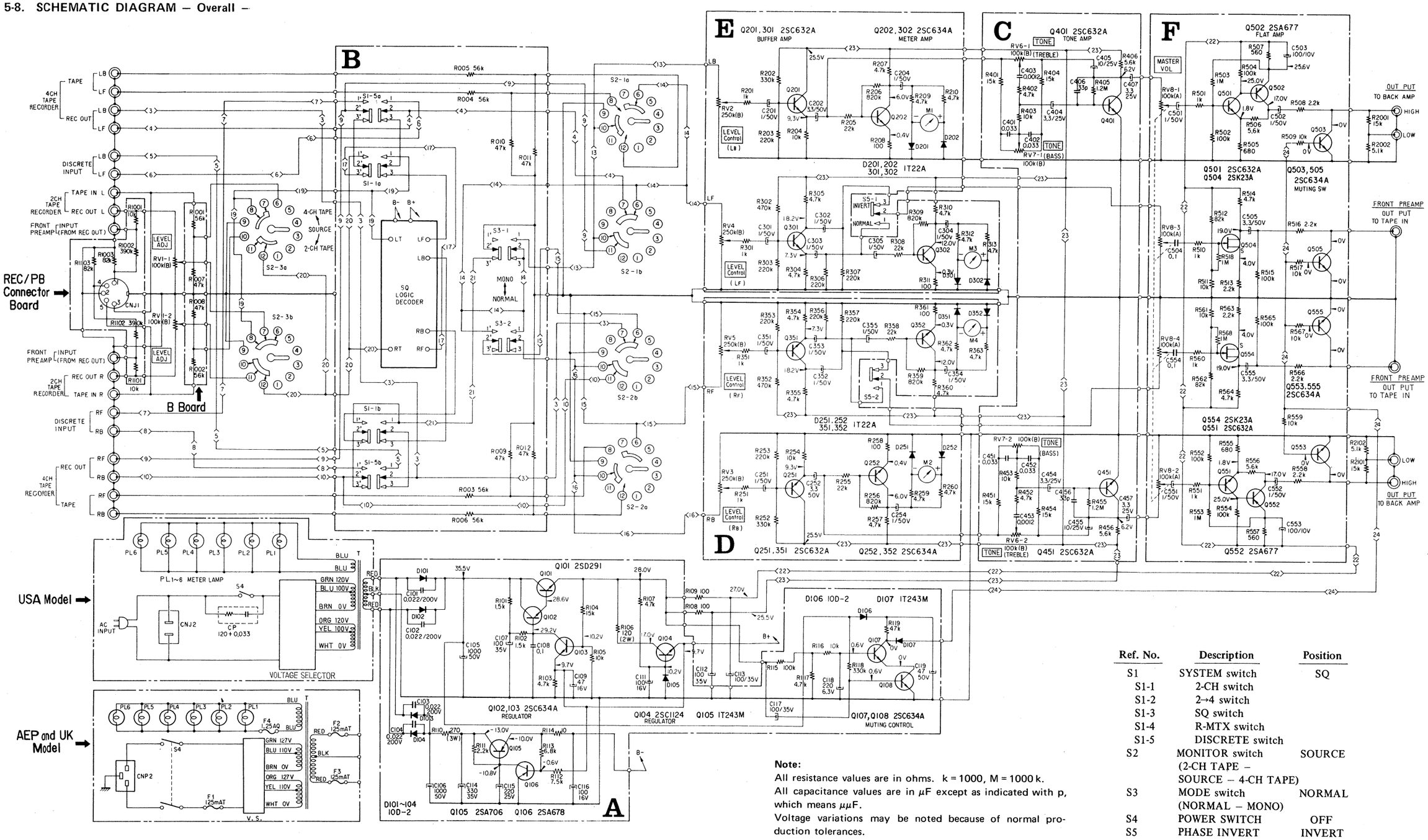


5-7. MOUNTING DIAGRAM – REC/PB Connector Board –

– Conductor Side –



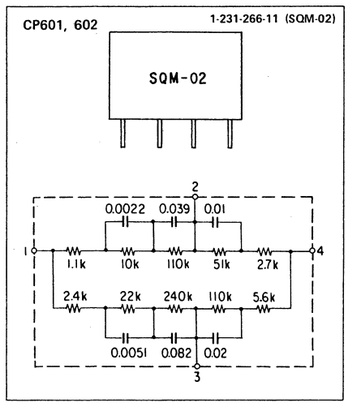
5-8. SCHEMATIC DIAGRAM — Overall —

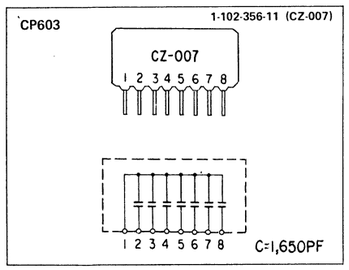


Ref. No.	Description	Position
S1	SYSTEM switch	SQ
S1-1	2-CH switch	
S1-2	2→4 switch	
S1-3	SQ switch	
S1-4	R-MTX switch	
S1-5	DISCRETE switch	
S2	MONITOR switch (2-CH TAPE – SOURCE – 4-CH TAPE)	SOURCE
S3	MODE switch (NORMAL – MONO)	NORMAL
S4	POWER SWITCH	OFF
S5	PHASE INVERT switch (NORMAL – INVERT)	INVERT

Note:
All resistance values are in ohms. k = 1000, M = 1000 k.
All capacitance values are in μF except as indicated with p, which means μμF.
Voltage variations may be noted because of normal production tolerances.
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.

5-9. SCHEMATIC DIAGRAM — SQ Decoder and Logic Section (B board) —





※ Voltages at the terminals of IC801

SQ checker input signal mode (signal = 2 kHz/-10 dB)	terminal no. of IC801			
	16	19	21	24
no signal	0 V	0 V	0 V	0 V
L_F, R_F	-4.5 V	+4.5 V	+1.4 V	-1.0 V
L_B, R_B	+4.5 V	-4.9 V	-0.8 V	+1.2 V
C_F	-1.1 V	+1.0 V	+4.2 V	-4.0 V
C_B	+1.1 V	-1.1 V	-4.0 V	+4.4 V

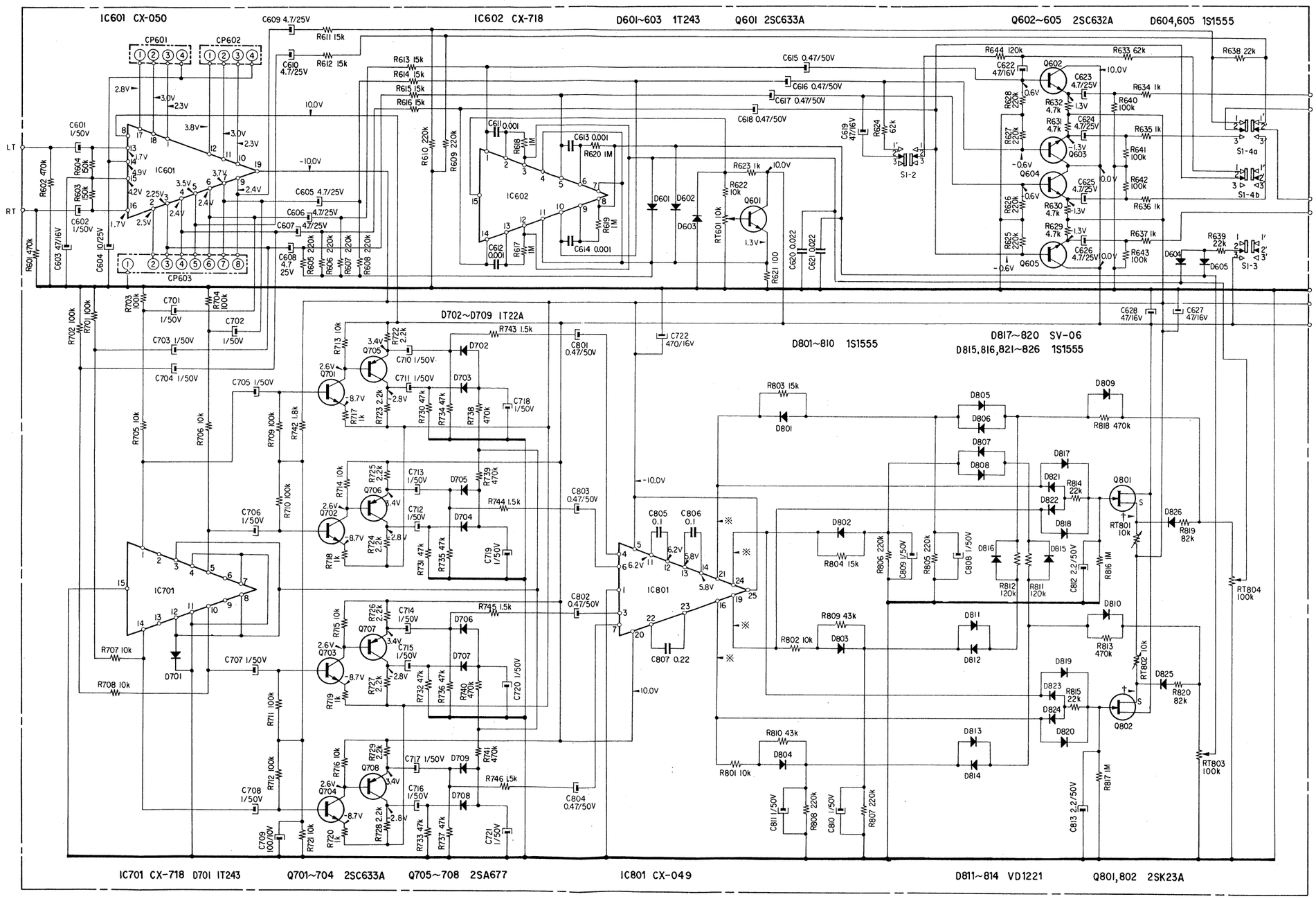
† Voltages at the source of Q801 and Q802

SQ checker input signal mode (signal = 2 kHz/-10 dB)	source, Q801	source, Q802
no signal	0 V	0 V
L_F,R_F,C_F	+1.7 V	-3.4 V
L_B,R_B,C_B	-3.4 V	+1.7 V

L_F = Left front
R_F = Right front
L_B = Left back
R_B = Right back
C_F = Center front
C_B = Center back

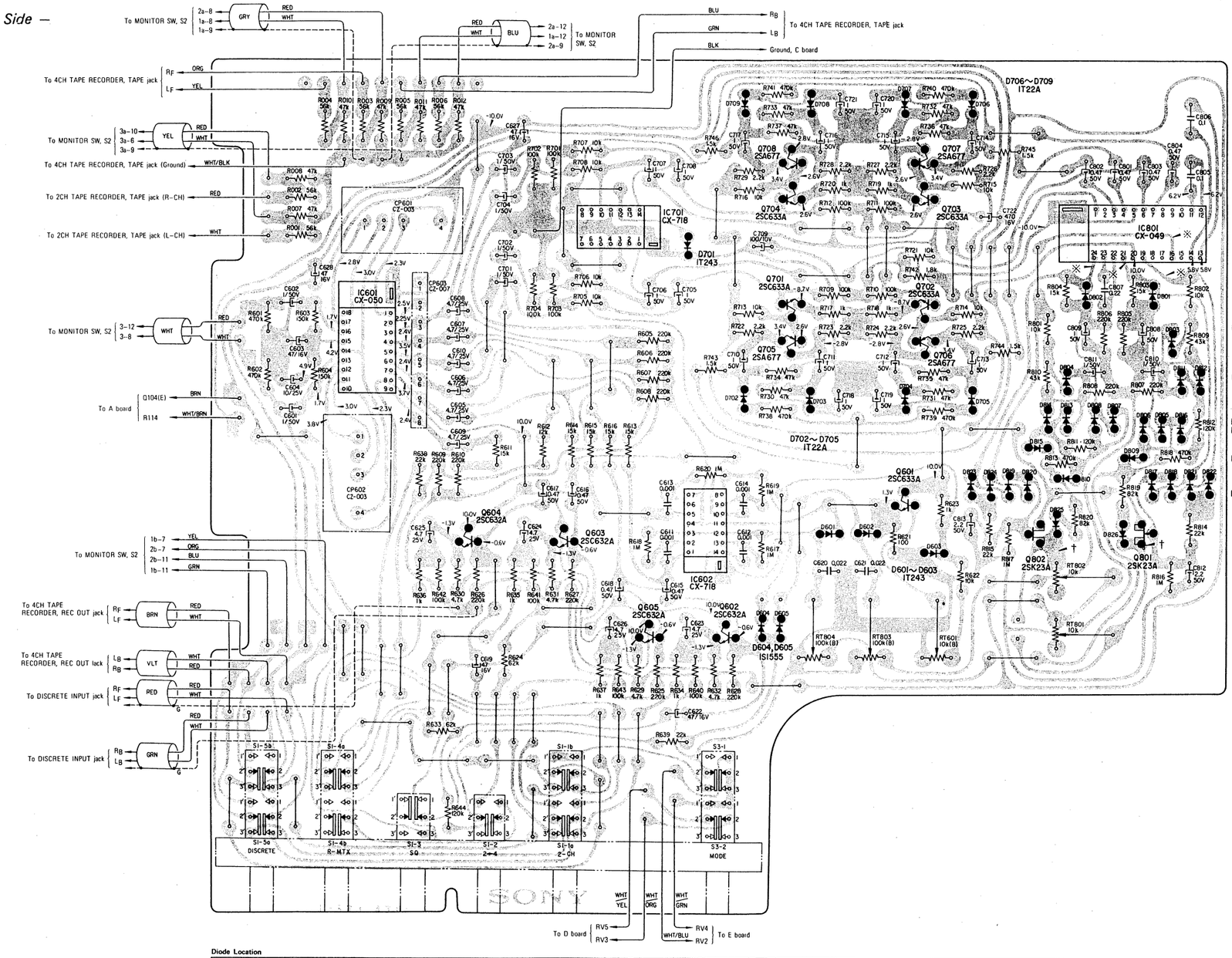
Ref. No.	Description	Position
S1	SYSTEM switch	SQ
S1-1	2-CH switch	
S1-2	2-4 switch	
S1-3	SQ switch	
S1-4	R-MTX switch	
S1-5	DISCRETE switch	
S2	MONITOR switch (2-CH TAPE – SOURCE – 4-CH TAPE)	SOURCE
S3	MODE switch (NORMAL – MONO)	NORMAL
S4	POWER SWITCH	OFF
S5	PHASE INVERT switch (NORMAL – INVERT)	INVERT

Note:
All resistance values are in ohms. k = 1000, M = 1000 k.
All capacitance values are in μF except as indicated with p, which means μμF.
Voltage variations may be noted because of normal production tolerances.
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.



5-10. MOUNTING DIAGRAM — B Board —

— Conductor Side —



※ Voltages at the terminals of IC801

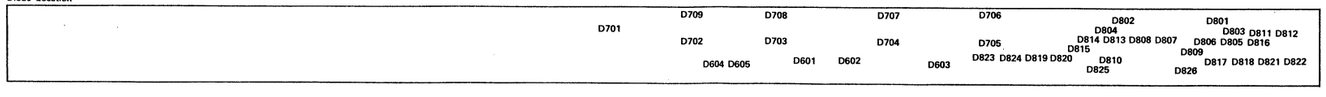
SQ checker input signal mode (signal = 2 kHz/−10 dB)	terminal no. of IC801			
	16	19	21	24
no signal	0 V	0 V	0 V	0 V
L_F, R_F	−4.5 V	+4.5 V	+1.4 V	−1.0 V
L_B, R_B	+4.5 V	−4.9 V	−0.8 V	+1.2 V
C_F	−1.1 V	+1.0 V	+4.2 V	−4.0 V
C_B	+1.1 V	−1.1 V	−4.0 V	+4.4 V

† Voltages at the source of Q801 and Q802

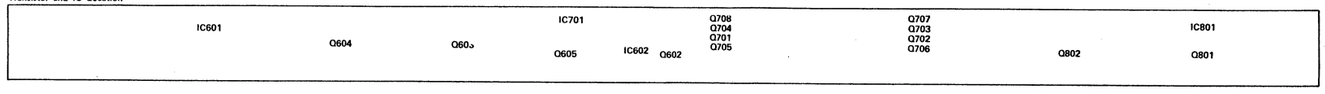
SQ checker input signal mode (signal = 2 kHz/−10 dB)	source, Q801	source, Q802
no signal	0 V	0 V
L_F,R_F,C_F	+1.7 V	−3.4 V
L_B,R_B,C_B	−3.4 V	+1.7 V

L_F = Left front
R_F = Right front
L_B = Left back
R_B = Right back
C_F = Center front
C_B = Center back

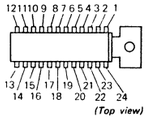
Diode Location



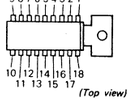
Transistor and IC Location



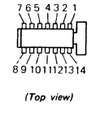
CX-049



CX-050

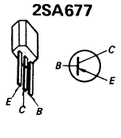


CX-718

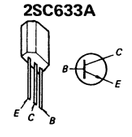


11

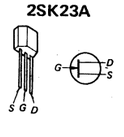
2SA677



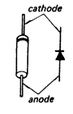
2SC632A 2SC633A



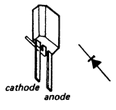
2SK23A



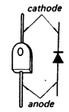
1S1555 1T22A



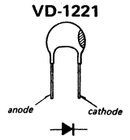
1T243



SV-06

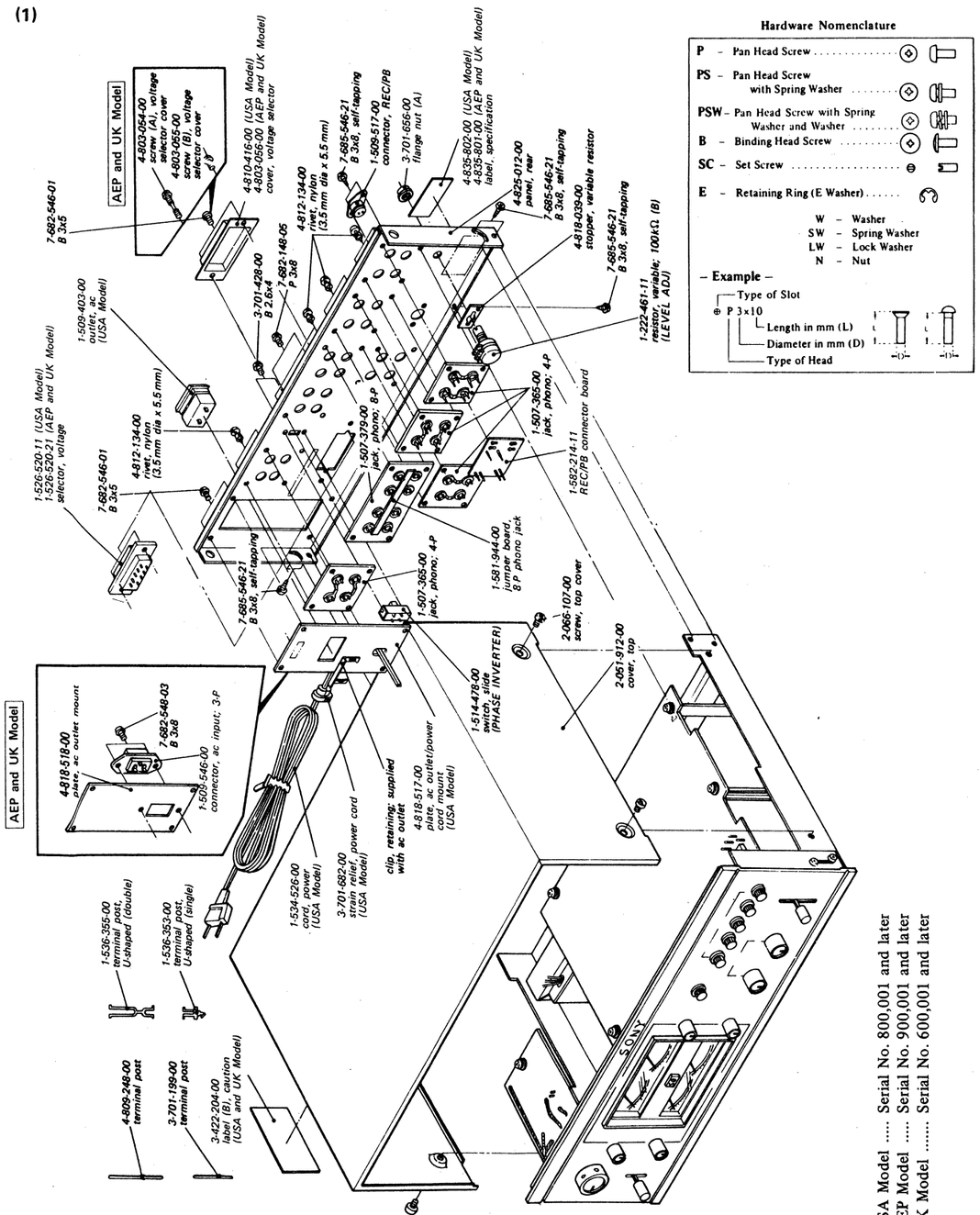


VD-1221



SECTION 6
EXPLODED VIEWS

(1)


AEP and UK Model
4-803-054-00 screw (A), voltage selector cover
4-803-055-00 screw (B), voltage selector cover
4-810-416-00 (USA Model) 4-803-056-00 (AEP and UK Model) cover, voltage selector
7-682-546-01 B 3x5
4-812-134-00 rivet, nylon (3.5mm dia x 5.5mm)
7-685-546-21 B 3x8, self-tapping
1-509-517-00 connector, REC/PB
3-701-656-00 flange nut (A)
4-835-807-00 (USA Model) 4-835-801-00 (AEP and UK Model) label, specification
4-825-012-00 panel, rear
4-818-039-00 stopper, variable resistor
1-222-461-11 resistor, variable; 100kΩ (B) (LEVEL ADJ)
1-509-402-00 outlet, ac (USA Model)
3-701-428-00 B 2.6x4
7-682-148-05 P 3x8
1-507-365-00 jack, phono; 4-P
1-507-379-00 jack, phono; 8-P
1-582-214-11 REC/PB connector board
1-526-520-11 (USA Model) 1-526-520-21 (AEP and UK Model) selector, voltage
1-581-944-00 jumper board, 8 P phono jack
1-507-365-00 jack, phono; 4-P
2-066-107-00 screw, top cover
2-051-912-00 cover, top
1-514-478-00 switch, slide (PHASE INVERTER)
AEP and UK Model
4-818-518-00 plate, ac outlet mount
7-682-548-03 B 3x8
1-509-546-00 connector, ac input; 3-P
1-534-526-00 cord, power (USA Model)
3-701-682-00 strain relief, power cord (USA Model)
clip, retaining; supplied with ac outlet
4-818-517-00 plate, ac outlet/power connector (USA Model)
1-536-355-00 terminal post, U-shaped (double)
1-536-353-00 terminal post, U-shaped (single)
4-809-248-00 terminal post
3-701-199-00 terminal post
3-422-204-00 label (B), caution (USA and UK Model)
SONY

Hardware Nomenclature

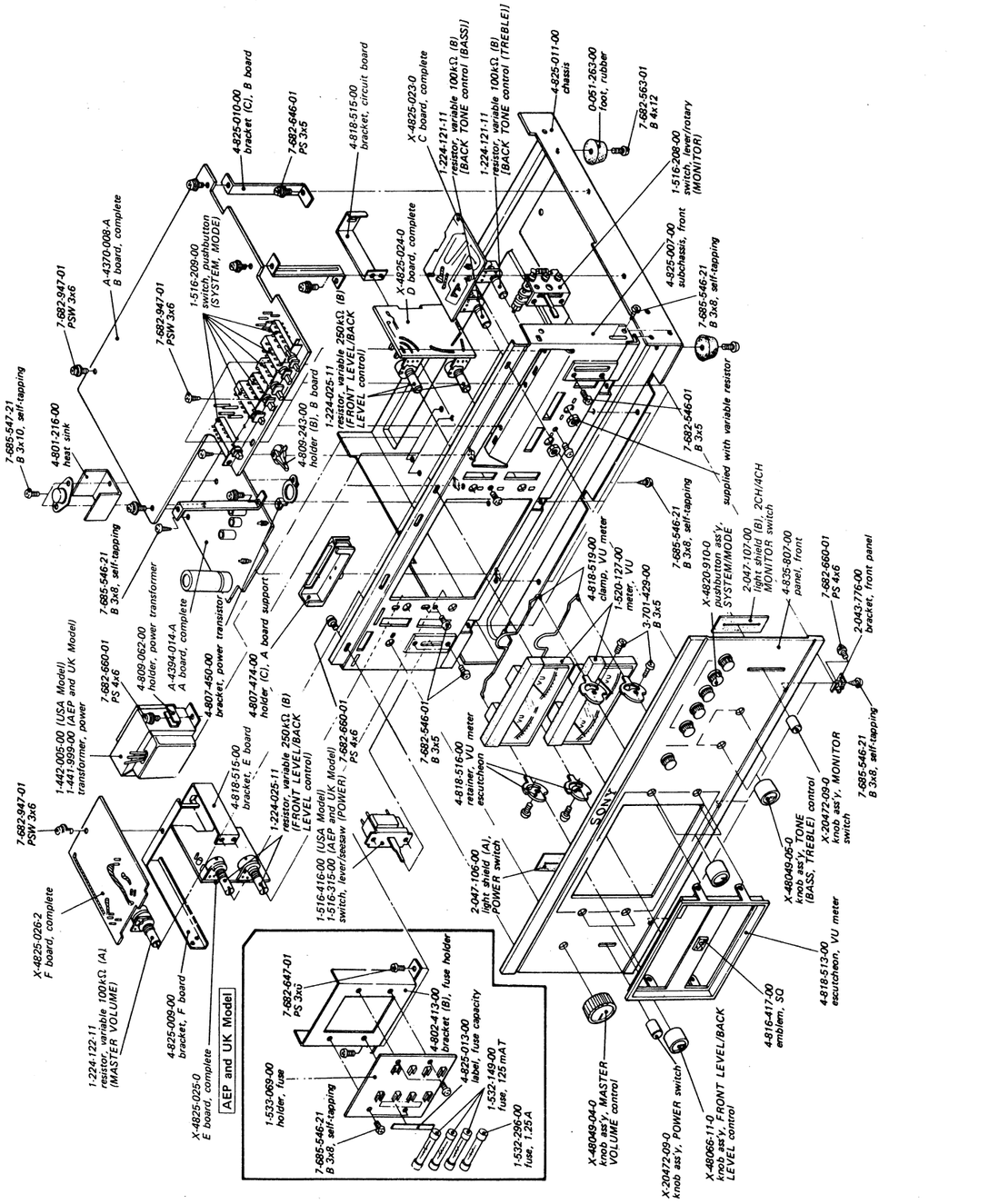
P	Pan Head Screw
PS	Pan Head Screw with Spring Washer
PSW	Pan Head Screw with Spring Washer and Washer
B	Binding Head Screw
SC	Set Screw
E	Retaining Ring (E Washer)

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

– Example –
Type of Slot
⊕ P 3×10
Length in mm (L)
Diameter in mm (D)
Type of Head

USA Model ..... Serial No. 800,001 and later
AEP Model ..... Serial No. 900,001 and later
UK Model ..... Serial No. 600,001 and later

(2)


4-825-010-00 bracket (C), B board
7-682-646-01 PS 3x5
4-818-515-00 bracket, circuit board
X-4825-023-0 C board, complete
1-224-121-11 resistor, variable 100kΩ (B) (BACK TONE control (BASS))
1-224-121-11 resistor, variable 100kΩ (B) (BACK TONE control (TREBLE))
4-825-011-00 chassis
0-051-263-00 foot, rubber
7-682-563-01 B 4x12
1-516-208-00 switch, lever/rotary (MONITOR)
4-825-007-00 subchassis, front
7-685-546-21 B 3x8, self-tapping
7-685-547-21 B 3x10, self-tapping
4-801-216-00 heat sink
7-682-947-01 PSW 3x6
A-4370-008-A B board, complete
1-516-209-00 switch, push-button (SYSTEM, MODE)
X-4825-024-0 D board, complete
1-224-025-11 resistor, variable 250kΩ (B) (FRONT LEVEL/BACK LEVEL control)
4-809-243-00 holder (B), B board
7-682-546-01 B 3x5
supplied with variable resistor
4-818-519-00 clamp, VU meter
1-520-127-00 meter, VU
3-701-429-00 B 3x5
X-4920-910-0 pushbutton ass'y, SYSTEM/MODE
2-047-107-00 light shield (B), 2CH/4CH MONITOR switch
4-835-807-00 panel, front
7-682-660-01 PS 4x6
2-043-776-00 bracket, front panel
4-825-010-00 bracket (C), B board
7-682-646-01 PS 3x5
A-4370-008-A B board, complete
7-682-947-01 PSW 3x6
1-516-209-00 switch, push-button (SYSTEM, MODE)
4-809-062-00 holder, power transistor
A-4394-014-A A board, complete
4-807-450-00 bracket, power transistor
4-807-474-00 holder (C), A board support
1-442-005-00 (USA Model) 1-441-999-00 (AEP and UK Model) transformer, power
7-682-600-01 PS 4x6
4-818-515-00 bracket, E board
1-224-025-11 resistor, variable 250kΩ (B) (FRONT LEVEL/BACK LEVEL control)
1-516-416-00 (USA Model) 1-516-415-00 (AEP and UK Model) switch, lever/slide (POWER)
7-682-660-01 PS 4x6
7-682-546-01 B 3x5
4-818-516-00 retainer, VU meter escutcheon
2-047-106-00 light shield (A), POWER switch
X-48049-06-0 knob ass'y, TONE (BASS, TREBLE) control
X-20472-09-0 knob ass'y, MONITOR switch
4-818-513-00 escutcheon, VU meter
7-685-546-21 B 3x8, self-tapping
X-4825-026-2 F board, complete
1-224-122-11 resistor, variable 100kΩ (A) (MASTER VOLUME)
4-825-009-00 bracket, F board
X-4825-025-0 E board, complete
AEP and UK Model
7-682-647-01 PS 3x8
4-802-413-00 bracket (B), fuse holder
4-825-013-00 label, fuse capacity
1-532-149-00 fuse, 125 mAT
1-533-069-00 holder, fuse
1-532-296-00 fuse, 1.25A
X-48049-04-0 knob ass'y, MASTER VOLUME control
X-20472-09-0 knob ass'y, POWER switch
X-48066-11-0 knob ass'y, FRONT LEVEL/BACK LEVEL control
4-816-417-00 emblem, SQ
SONY

SECTION 7
ELECTRICAL PARTS LIST

Note: USA Model ..... Serial No. 800,001 and later
AEP Model ..... Serial No. 900,001 and later
UK Model ..... Serial No. 600,001 and later

Ref. No.	Part No.	Description
	COMPLETE CIRCUIT BOARDS	
	A-4394-014-A A	
	A-4370-008-A B	
	X-4825-023-0 C	
	X-4825-024-0 D	
	X-4825-025-0 E	
	X-4825-026-2 F	
	SEMICONDUCTORS	
Q101	Transistor	2SD291
Q102	Transistor	2SC634A
Q103	Transistor	2SC634A
Q104	Transistor	2SC1124
Q105	Transistor	2SA706
Q106	Transistor	2SA678
Q107	Transistor	2SC634A
Q108	Transistor	2SC634A
Q201(Q251)	Transistor	2SC632A
Q202(Q252)	Transistor	2SC634A
Q301(Q351)	Transistor	2SC632A
Q302(Q352)	Transistor	2SC634A
Q401(Q451)	Transistor	2SC632A
Q501(Q551)	Transistor	2SC632A
Q502(Q552)	Transistor	2SA677
Q503(Q553)	Transistor	2SC634A
Q504(Q554)	FET	2SK23A
Q505(Q555)	Transistor	2SC634A
Q601	Transistor	2SC633A
Q602~Q605	Transistor	2SC632A
Q701~Q704	Transistor	2SC633A
Q705~Q708	Transistor	2SA677
Q801	FET	2SK23A
Q802	FET	2SK23A
IC601	IC	CX-050
IC602	IC	CX-718
IC701	IC	CX-718
IC801	IC	CX-049

Ref. No.	Part No.	Description
D101~D104	Diode	10D-2
D105	Diode	1T243
D106	Diode	10D-2
D107	Diode	1T243
D201(D251)	Diode	1T22A
D202(D252)	Diode	1T22A
D301(D351)	Diode	1T22A
D302(D352)	Diode	1T22A
D601	Diode	1T243
D602	Diode	1T243
D603	Diode	1T243
D604	Diode	1S1555
D605	Diode	1S1555
D701	Diode	1T243
D702~D709	Diode	1T22A
D801~D810	Diode	1S1555
D811~D814	Diode	VD-1221
D815	Diode	1S1555
D816	Diode	1S1555
D817~D820	Diode	SV-06
D821~D826	Diode	1S1555

TRANSFORMERS

T	1-442-005-00	Power (USA Model)
	1-441-999-00	Power (AEP and UK Model)

CAPACITORS

Capacitors listed here are electrolytic type unless otherwise specified and in μF except as indicated with p (p means μμ).

Ref. No.	Part No.				
C101~C104	1-108-696-12	0.022	±10%	200V	mylar
C105	1-123-061-11	1000		50V	
C106	1-123-061-11	1000		50V	
C107	1-123-062-11	100		35V	
C108	1-105-685-12	0.1	±10%	50V	mylar
C109	1-121-409-11	47		16V	
C111	1-121-415-11	100		16V	
C112	1-123-062-11	100		35V	
C113	1-123-062-11	100		35V	
C114	1-123-064-11	330		35V	
C115	1-121-936-11	220		25V	
C116	1-121-415-11	100		16V	
C117	1-123-062-11	100		35V	
C118	1-121-419-11	220		6.3V	
C119	1-121-411-11	47		50V	
C201(C251)	1-121-912-11	1		50V	
C202(C252)	1-121-914-11	3.3		50V	
C203(C253)		----------			
C204(C254)	1-121-912-11	1		50V	
C301(C351)	1-121-912-11	1		50V	
C302(C352)	1-121-912-11	1		50V	
C303(C353)	1-121-912-11	1		50V	
C304(C354)	1-121-912-11	1		50V	
C305(C355)	1-121-912-11	1		50V	
C401(C451)	1-105-679-12	0.033	±10%	50V	mylar
C402(C452)	1-105-679-12	0.033	±10%	50V	mylar
C403(C453)	1-105-662-12	0.0012	±10%	50V	mylar
C404(C454)	1-121-913-11	3.3		25V	
C405(C455)	1-121-748-11	10		25V	
C406(C456)	1-102-963-11	33p	±5%	50V	ceramic
C407(C457)	1-121-913-11	3.3		25V	
C501(C551)	1-121-912-11	1		50V	
C502(C552)	1-121-912-11	1		50V	
C503(C553)	1-121-414-11	100		10V	
C504(C554)	1-105-685-12	0.1	±10%	50V	mylar
C505(C555)	1-121-914-11	3.3		50V	
C601	1-121-912-11	1		50V	
C602	1-121-912-11	1		50V	
C603	1-121-409-11	47		16V	
C604	1-121-398-11	10		25V	
C605~610	1-121-915-11	4.7		25V	
C611~C614	1-105-661-12	0.001	±10%	50V	mylar
C615~C618	1-121-911-11	0.47		50V	
C619	1-121-409-11	47		16V	
C620	1-105-677-12	0.022	±10%	50V	mylar
C621	1-105-677-12	0.022	±10%	50V	mylar
C622	1-121-409-11	47		16V	
C623~C626	1-121-915-11	4.7		25V	
C627	1-121-409-11	47		16V	
C628	1-121-409-11	47		16V	
C701~C708	1-121-912-11	1		50V	
C709	1-121-414-11	100		10V	
C710~C721	1-121-912-11	1		50V	
C722	1-121-426-11	470		16V	
C801~C804	1-121-911-11	0.47		50V	
C805	1-105-685-12	0.1	±10%	50V	mylar
C806	1-105-685-12	0.1	±10%	50V	mylar
C807	1-105-689-12	0.22	±10%	50V	mylar
C808~C811	1-121-912-11	1		50V	
C812	1-121-450-11	2.2		50V	
C813	1-121-450-11	2.2		50V	

RESISTORS

All resistors are in Ω, ±5%, ¼W and carbon type unless otherwise specified.

Ref. No.	Part No.			
R001~R006	1-242-715-11	56k		
R007~R012	1-242-713-11	47k		
R101	1-242-677-11	1.5k		
R102	1-242-677-11	1.5k		
R103	1-242-689-11	4.7k		
R104	1-242-701-11	15k		
R105	1-242-697-11	10k		
R106	1-207-913-11	120	2W	wirewound
R107	1-242-689-11	4.7k		
R108	1-242-649-11	100		
R109	1-242-649-11	100		
R110	1-207-926-11	270	3W	wirewound
R111	1-242-681-11	2.2k		
R112	1-242-694-11	7.5k		
R113	1-242-693-11	6.8k		
R114	1-242-625-11	10		
R115	1-242-721-11	100k		
R116	1-242-697-11	10k		
R117	1-242-689-11	4.7k		
R118	1-242-733-11	330k		
R119	1-242-713-11	47k		
R201(R251)	1-242-673-11	1k		
R202(R252)	1-242-733-11	330k		
R203(R253)	1-242-729-11	220k		
R204(R254)	1-242-697-11	10k		
R205(R255)	1-242-705-11	22k		

Ref. No.	Part No.		Description
R206(R256)	1-242-743-11	820k	
R207(R257)	1-242-689-11	4.7k	
R208(R258)	1-242-649-11	100	
R209(R259)	1-242-689-11	4.7k	
R210(R260)	1-242-689-11	4.7k	
R301(R351)	1-242-673-11	1k	
R302(R352)	1-242-737-11	470k	
R303(R353)	1-242-729-11	220k	
R304(R354)	1-242-689-11	4.7k	
R305(R355)	1-242-689-11	4.7k	
R306(R356)	1-242-729-11	220k	
R307(R357)	1-242-729-11	220k	
R308(R358)	1-242-705-11	22k	
R309(R359)	1-242-743-11	820k	
R310(R360)	1-242-689-11	4.7k	
R311(R361)	1-242-649-11	100	
R312(R362)	1-242-689-11	4.7k	
R313(R363)	1-242-689-11	4.7k	
R401(R451)	1-242-701-11	15k	
R402(R452)	1-242-689-11	4.7k	
R403(R453)	1-242-697-11	10k	
R404(R454)	1-242-701-11	15k	
R405(R455)	1-202-457-11	1.2M	composition
R406(R456)	1-242-691-11	5.6k	
R501(R551)	1-242-673-11	1k	
R502(R552)	1-242-721-11	100k	
R503(R553)	1-242-745-11	1M	
R504(R554)	1-242-721-11	100k	
R505(R555)	1-242-669-11	680	
R506(R556)	1-242-691-11	5.6k	
R507(R557)	1-242-667-11	560	
R508(R558)	1-242-681-11	2.2k	
R509(R559)	1-242-697-11	10k	
R510(R560)	1-242-673-11	1k	
R511(R561)	1-242-697-11	10k	
R512(R562)	1-242-719-11	82k	
R513(R563)	1-242-681-11	2.2k	
R514(R564)	1-242-689-11	4.7k	
R515(R565)	1-242-721-11	100k	
R516(R566)	1-242-681-11	2.2k	
R517(R567)	1-242-697-11	10k	
R518(R568)	1-242-745-11	1M	

Ref. No.	Part No.		Description
R601	1-242-737-11	470k	
R602	1-242-737-11	470k	
R603	1-242-725-11	150k	
R604	1-242-725-11	150k	
R605~R610	1-242-729-11	220k	
R611~R616	1-242-701-09	15k	(low noise)
R617~R620	1-242-745-11	1M	
R621	1-242-649-11	100	
R622	1-242-697-11	10k	
R623	1-242-673-11	1k	
R624	1-242-716-11	62k	
R625~R628	1-242-729-11	220k	
R629~R632	1-242-689-11	4.7k	
R633	1-242-716-11	62k	
R634~R637	1-242-673-11	1k	
R638	1-242-705-11	22k	
R639	1-242-705-11	22k	
R640~R643	1-242-721-11	100k	
R644	1-242-723-11	120k	
R701~R704	1-242-721-11	100k	
R705~R708	1-242-697-11	10k	
R709~R712	1-242-721-11	100k	
R713~R716	1-242-697-11	10k	
R717~R720	1-242-673-11	1k	
R721	1-242-697-11	10k	
R722~R729	1-242-681-11	2.2k	
R730~R737	1-242-713-11	47k	
R738~R741	1-242-737-11	470k	
R742	1-242-679-11	1.8k	
R743~R746	1-242-677-11	1.5k	
R801	1-242-697-11	10k	
R802	1-242-697-11	10k	
R803	1-242-701-11	15k	
R804	1-242-701-11	15k	
R805~R808	1-242-729-11	220k	
R809	1-242-712-11	43k	
R810	1-242-712-11	43k	
R811	1-242-723-11	120k	
R812	1-242-723-11	120k	
R813	1-242-737-11	470k	
R814	1-242-705-11	22k	
R815	1-242-705-11	22k	
R816	1-242-745-11	1M	
R817	1-242-745-11	1M	

Ref. No.	Part No.		Description
R818	1-242-737-11	470k	
R819	1-242-719-11	82k	
R820	1-242-719-11	82k	
R1001 (R1101)	1-244-697-11	10k	
R1002 (R1102)	1-244-735-11	390k	
R1003 (R1103)	1-244-719-11	82k	
R2001 (R2101)	1-244-701-11	15k	
R2002 (R2102)	1-244-690-11	5.1k	
RT601	1-222-752-11	10k, adjustable	
RT801,802	1-222-752-11	10k, adjustable	
RT803,804	1-222-766-11	100k, adjustable	
RV1	1-222-461-11	100k (B), variable (LEVEL ADJ)	
RV2	1-224-025-11	250k (B), variable (LEVEL ADJ), L-CH (BACK)	
RV3	1-224-025-11	250k (B), variable (LEVEL ADJ), R-CH (BACK)	
RV4	1-224-025-11	250k (B), variable (LEVEL ADJ), L-CH (FRONT)	
RV5	1-224-025-11	250k (B), variable (LEVEL ADJ), R-CH (FRONT)	
RV6	1-224-121-11	100k (B), variable (TREBLE)	
RV7	1-224-121-11	100k (B), variable (BASS)	
RV8	1-224-122-11	100k (A), variable (MASTER VOLUME)	

SWITCHES

S1,3	1-516-209-00	Pushbutton, 6-key (SYSTEM, MODE)	
S2	1-516-208-00	Lever/Rotary (MONITOR)	
S4	1-516-315-00	Lever/Seesaw (POWER) (AEP and UK Model)	
	1-516-416-00	Lever/Seesaw (POWER) (USA Model)	
S5	1-514-478-00	Slide (PHASE INVERTER)	

MISCELLANEOUS

CNJ1	1-509-517-00	Connector, REC/PB
CNJ2	1-509-403-00	Outlet, ac (USA Model)
	1-509-546-00	Connector, ac input; 3-P (AEP and UK Model)
CP	1-231-057-00	Encapsulated Component, 120 Ω + 0.033 μF (USA Model only)
CP601,602	1-231-266-00	Encapsulated Component
CP603	1-102-356-11	Capacitor, ceramic (block)
M1~4	1-520-127-00	Meter, VU
P	1-534-487-00	Cord, power (UK Model)
	1-534-526-00	Cord, power (USA Model)
PL1~6	1-518-142-00	Lamp, meter; 8 V/0.05A
VS	1-526-520-11	Selector, voltage (USA Model)
	1-526-520-21	Selector, voltage (AEP and UK Model)
	1-508-648-00	Connector, 4-P; male
	1-508-649-00	Connector, 6-P; male
	1-508-650-00	Connector, 10-P; male
	1-508-684-00	Connector, 2-P; male
	1-507-365-00	Jack, phono; 4-P
	1-507-379-00	Jack, phono; 8-P
	1-532-149-00	Fuse, 125 mAT (AEP and UK Model only)
	1-532-296-00	Fuse, 1.25A (AEP and UK Model only)
	1-533-069-00	Holder, fuse; 4-P (AEP and UK Model only)
	1-533-074-00	Socket, IC
	1-536-354-00	Terminal Post
	1-536-355-00	Terminal Post, U-shaped (double)
	1-581-944-00	Jumper Board, 8-P phono jack

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